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ABSTRACT

The second of two reports on a national evaluation of the immediate effects of Project Head Start describes the characteristics of children, families and programs in samples of full-year classes operating in 1966-67 and 1967-68. No control groups were used; comparisons were made within the Head Start sample to see what kinds of classroom experiences "work best" for what kinds of children. Where appropriate in this report, comparisons are made across years concerning the patterns of child-program interaction effects. Chapters 1 through 10 concern the 1967-68 data: (1) design; (2) measures for analysis; (3) the children: entering characteristics; (4) their families: entering characteristics; (5) programs--class and site characteristics, observed classroom use of materials, observed classroom activities, teachers' education and experience; (6) gains associated with Head Start--cognitive and social-emotional measures, parent attitudes; (7) differences in gains for different types of children; (8) differences in gains associated with different program approaches; (9) relationships between program approaches and performance for different subgroups of children; and (10) summary. Chapter 11 presents similar data for the 1966-67 evaluation. Appendices provide frequency distributions for scores on dependent variables for both years. References are provided. (KM)

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TECHNICAL MEMORANDUM

(TM Series)

EFFECTS OF DIFFERENT HEAD START PROGRAM APPROACHES ON CHILDREN OF DIFFERENT CHARACTERISTICS: REPORT ON ANALYSIS OF DATA FROM 1966-67 AND 1967-68 NATIONAL EVALUATIONS

Contract No. HEW-OS-70-168

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Project Head Start
Office of Child Development
U.S. Department of Health, Education, and Welfare

29 August 1972

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SDC

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TABLE OF CONTENTS

Chapter		Page
I	DESIGN OF THE 1967-68 EVALUATION	1
II	MEASURES FOR 1967-68 ANALYSIS	5
	A. Instruments	5
	1. Instruments Pertaining to Children	5
	2. Instrument Pertaining to Parents and Families	6
	3. Instruments Pertaining to Programs	6
	B. Procedures for Defining Variables	7
	C. Initial Set of Variables	8
	1. Child-Oriented Variables	8
	2. Program-Oriented Variables	9
	D. Correlational Analyses of Initial Set of Variables	10
	E. Selection of Subset of Variables for Analyses of Variance	11
	1. Class-Staff Composition and Stability	23
	2. Teacher's Training and Experience	24
	3. Materials in Use in the Classrooms	24
III	THE CHILDREN: ENTERING CHARACTERISTICS	29
	A. Personal and Background Characteristics	29
	1. Geographic Region of Residence	29
	2. Urban/Non-Urban Residence	29
	3. Ethnicity	29
	4. Child's Age	33
	5. Child's Sex	33
	6. Child's Prior Head Start Experience	33
	7. Amount of Adult Reading to Child in Home	33
	B. Pretest Performance	33
	1. Cognitive Performance	33
	2. Social-Emotional Measures	39
	C. Entry Characteristics Related To Prior Head Start Experience	44
	D. Summary	48

TABLE OF CONTENTS (Cont'd)

Chapter		Page
IV	THEIR FAMILIES: ENTERING CHARACTERISTICS	51
	A. Socio-Economic Indicators	51
	1. Mother's Education	51
	2. Mother's Occupation	51
	3. Father's Education	51
	4. Father's Occupation	51
	B. Other Family Characteristics	54
	1. Family Structure	54
	2. Family Mobility	54
	3. Other Children Previously in Head Start	54
	C. Parent Attitudes	54
	1. Perceived Effect of Head Start on Child	54
	2. Expected Positive Influence of Head Start on Parent	58
	3. Attitude Toward Sending Other Children to Head Start	58
	4. Parent's Educational Aspirations for Child	58
	5. Parent's Educational Expectations for Child	58
	6. Parent's Feeling of Value of Education	58
	D. Summary	63
V	THE PROGRAMS	65
	A. Class And Site Characteristics	65
	1. Delegate Agency	65
	2. Class Meetings Per Week and Hours of Class Per Day	65
	3. Number of Children in Class	65
	4. Pupil/Teacher Ratio	68
	5. Teacher-Class Ethnic Match	68
	6. Head Teacher's Continuity	68
	7. Outdoor Facility: Square Feet Per Child	68
	B. Observed Classroom Use of Materials	68
	1. Science Materials	73
	2. Language Materials	73
	3. Music Materials	73
	4. Art Materials	73
	5. Dramatic Materials	73
	6. Small-Muscle Materials	73

TABLE OF CONTENTS (Cont'd)

Chapter Page

7. Large-Muscle Materials 80

C. Observed Classroom Activities 80

D. Teachers' Education And Experience 83

1. Education 83
2. Experience with Disadvantaged Children 83

E. Summary 83

VI GAINS ASSOCIATED WITH HEAD START 87

A. Pretest-Posttest Performance Changes 87

1. Cognitive Measure 89
2. Social-Emotional Measures 89
3. Parent Attitudes 89

B. Effects of Missing Data 90
C. Summary 90

VII DIFFERENCES IN GAINS FOR DIFFERENT TYPES OF CHILDREN 92

A. Child's Age 92
B. Child's Sex 92
C. Child's Initial (Pretest) IQ 95
D. Urban/Non-Urban Residence 97
E. South/Non-South Residence 97
F. Stanford-Binet Pretest Weeks 100
G. Summary 102

VIII DIFFERENCES IN GAINS ASSOCIATED WITH DIFFERENT PROGRAM APPROACHES

A. Results of Analyses of Variance 104

1. Class Transiency 105
2. Teacher Continuity 107
3. Pupil/Teacher Ratio 108
4. Teacher's Education 111
5. Teacher's Experience with Disadvantaged Children 111
6. OSCI: Large-Muscle Materials 113
7. OSCI: Small-Muscle Materials 116
8. OSCI: Language Materials 118
9. OSCI: Dramatic Materials 120

B. Summary 120

TABLE OF CONTENTS (Cont'd)

Chapter		Page
IX	RELATIONSHIPS BETWEEN PROGRAM APPROACHES AND PERFORMANCE FOR DIFFERENT SUBGROUPS OF CHILDREN	125
	A. Subsetting Variables	125
	1. Child's Initial IQ	126
	2. Child's Age	126
	3. Urban vs. Non-Urban Residence	126
	4. South vs. Non-South Residence	127
	B. Results of Analyses for Different Subgroups	127
	1. Class Transiency	129
	2. Teacher Continuity	132
	3. Pupil/Teacher Ratio	137
	4. Teacher's Education	137
	5. Teacher's Experience with Disadvantaged Children	146
	6. OSCI: Large-Muscle Materials	151
	7. OSCI: Small-Muscle Materials	151
	8. OSCI: Language Materials	156
	9. OSCI: Dramatic Materials	160
	C. Summary	160
X	SUMMARY OF 1967-68 FINDINGS	169
	A. Data Collection Instruments	170
	1. Instruments Pertaining to Children	170
	2. Instrument Pertaining to Parents and Families	171
	3. Instruments Pertaining to Programs	171
	B. Major Findings	172
	1. Entry Characteristics of Children and Parents	172
	2. Characteristics of the Programs	173
	3. Gains Associated with Head Start Participation	174
	4. Differences in Gains for Different Groups of Children	177
	5. Differences in Gains with Different Program Approaches	179
	6. Interactions Between Child and Program Variables	196

TABLE OF CONTENTS (Cont'd)

Chapter Page

XI ANALYSIS OF NATIONAL EVALUATION DATA FOR 1966-67 201

A. Measures 202

1. Program Variables 203
2. Dependent (Performance) Variables 207

B. Children's Entry Characteristics 208
C. Program Characteristics 217
D. Gains Associated with Head Start 220
E. Differences in Gains for Different Types of Children 226

1. Child's Age 226
2. Child's Pretest IQ 226
3. Child's Urban/Non-Urban Residence 226
4. Pretest-Posttest Interval 230

F. Differences in Gains Associated with Different Program Approaches 230

1. Teacher's Education 233
2. Teacher's Experience with Preschoolers and Poverty Children 233
3. Teacher's Academic Orientation 233

G. Relationships Between Program Approaches and Performance for Different Subgroups of Children 233

1. Teacher's Education 241
2. Teacher's Experience with Preschoolers and Poverty Children 245
3. Teacher's Social Development Techniques 250
4. Teacher's Academic Orientation 253
5. Adequacy of Outdoor Play Equipment 259
6. Teacher's Non-Punitiveness 263

H. Summary of Findings for 1966-67 263

Appendix

A FREQUENCY DISTRIBUTION OF PRETEST, POSTTEST, AND GAIN SCORES ON DEPENDENT VARIABLES 267

B FREQUENCY DISTRIBUTION OF PRETEST, POSTTEST, AND GAIN SCORES ON DEPENDENT VARIABLES (1966-67) 290

References 305

LIST OF TABLES

Table		Page
1	Pre vs. Post Correlations Between Independent Variables and Values on Stanford-Binet	12
2	Pre vs. Post Correlations Between Independent Variables and Values on Factors Affecting Test Performance (FATP)	13
3	Pre vs. Post Correlations Between Independent Variables and Values on SIOP - Total Verbal Behavior	14
4	Pre vs. Post Correlations Between Independent Variables and Values on SIOP - Total Non-Verbal Behavior	15
5	Pre vs. Post Correlations Between Independent Variables and Values on SIOP - Total Inappropriate Behavior	15
6	Pre vs. Post Correlations Between Independent Variables and Values on SIOP - Initiations by Subject to Peers of Same Ethnic Group	16
7	Pre vs. Post Correlations Between Independent Variables and Values on SIOP - Initiations by Subject to Peers of Other Ethnic Group	17
8	Pre vs. Post Correlations Between Independent Variables and Values on SIOP - Initiation to Subject by Same Ethnic Group Peers	18
9	Pre vs. Post Correlations Between Independent Variables and Values on SIOP - Initiation to Subject By Other Ethnic Group Peers	19
10	Pre vs. Post Correlations Between Independent Variables and Values on Parent's Estimate of Head Start Benefits to Child	19
11	Pre vs. Post Correlations Between Independent Variables and Values on Parent's Educational Aspirations for Child	20
12	Pre vs. Post Correlations Between Independent Variables and Values on Parent's Educational Expectations for Child	20
13	Pre vs. Post Correlations Between Independent Variables and Values on Disparity in Parent's Aspirations and Expectations for Child	21

LIST OF TABLES (Cont'd)

Table		Page
14	Pre vs. Post Correlations Between Independent Variables and Values on Parent's Estimate of Child's Fear Reactions	22
15	Pre vs. Post Correlations Between Independent Variables and Values on Parent's Feeling of Value of Education	22
16	Pre vs. Post Correlations Between Independent Variables and Values on Mother's Involvement in Community	22
17	Distribution of Values on Child's Geographic Region	30
18	Distribution of Values on Urban/Non-Urban Residency	31
19	Distribution of Values on Child's Ethnicity	32
20	Distribution of Values on Child's Age at Entry (Months)	34
21	Distribution of Values on Child's Sex	35
22	Distribution of Values on Child's Prior Head Start Experience	36
23	Distribution of Values on Adult Reading to Child (Pre)	37
24	Distribution of Values on Stanford-Binet (Pre)	38
25	Distribution of Values on Factors Affecting Test Performance (Pre)	40
26	Distribution of Values on SIOP: Total Verbal Behavior (Pre)	41
27	Distribution of Values on SIOP: Total Non-Verbal Behavior (Pre)	42
28	Distribution of Values on SIOP: Total Inappropriate Behavior (Pre)	43
29	Distribution of Values on SIOP: Initiations by Subject to Peers of Same Ethnic Group (Pre)	45
30	Distribution of Values on SIOP: Initiations by Subject to Peers of Other Ethnic Group (Pre)	46
31	Comparison of Pretest Scores for Children With and Without Prior Head Start Experience	47

LIST OF TABLES (Cont'd)

Table		Page
32	Distribution of Values on Mother's Education	52
33	Distribution of Values on Mother's Occupation	52
34	Distribution of Values on Father's Education	53
35	Distribution of Values on Father's Occupation	53
36	Distribution of Values on Family Structure	55
37	Distribution of Values on Family Mobility (Moves in Five Years)	56
38	Distribution of Values on Other Children Previously in Head Start	57
39	Distribution of Values on Effect of Head Start on Child (Pre)	57
40	Distribution of Values on Expected Positive Influence of Head Start on Parent (Pre)	59
41	Distribution of Values on Parent Attitude Toward Sending Other Children to Head Start (Pre)	59
42	Distribution of Values on Parent Educational Aspirations for Child	60
43	Distribution of Values on Parent Educational Expectations for Child (Pre)	61
44	Distribution of Values on Parent Feeling of Value of Education (Pre)	62
45	Distribution of Values on Delegate Agency	66
46	Distribution of Values on Class Meetings Per Week	66
47	Distribution of Values on Hours of Class Per Day	66
48	Distribution of Values on Number of Children in Class	67
49	Distribution of Values on Pupil/Teacher Ratio	69
50	Distribution of Values on Teacher-Class Ethnic Match	70

LIST OF TABLES (Cont'd)

Table		Page
51	Distribution of Values on Head Teacher's Continuity	71
52	Distribution of Values on Outdoor Facility: Square Feet Per Child	72
53	Distribution of Values on OSCI: Science Materials	74
54	Distribution of Values on OSCI: Language Materials	75
55	Distribution of Values on OSCI: Music Materials	76
56	Distribution of Values on OSCI: Art Materials	77
57	Distribution of Values on OSCI: Dramatic Materials	78
58	Distribution of Values on OSCI: Small-Muscle Materials	79
59	Distribution of Values on OSCI: Large-Muscle Materials	81
60	Distribution of Values on Teacher's Education	84
61	Distribution of Values on Teacher's Experience With Disadvantaged Children	85
62	Pretest-Posttest Performance Changes	88
63	Differences in Child Gains Associated With Child's Age	93
64	Differences in Child Gains Associated With Child's Sex	94
65	Differences in Child Gains Associated With Child's Pretest IQ	95
66	Differences in Child Gains Associated With Urban/Non-Urban Residence	98
67	Differences in Child Gains Associated With South/Non-South Residence	99
68	Differences in Child Gains Associated With Stanford-Binet Pretest Weeks	101
69	Results of Analyses of Variance on Class Transiency	106

LIST OF TABLES (Cont'd)

Table		Page
70	Results of Analyses of Variance on Teacher Continuity	109
71	Results of Analyses of Variance on Pupil/Teacher Ratio	110
72	Results of Analyses of Variance on Teacher's Education	112
73	Results of Analyses of Variance on Teacher's Experience with Disadvantaged Children	114
74	Results of Analyses of Variance on OSCI: Large-Muscle Materials	115
75	Results of Analyses of Variance on OSCI: Small-Muscle Materials	117
76	Results of Analyses of Variance on OSCI: Language Materials	119
77	Results of Analyses of Variance on OSCI: Dramatic Materials	121
78	Analysis of Variance on Class Transiency Subset by Pretest IQ	130
79	Analysis of Variance on Class Transiency Subset by Child's Age	131
80	Analysis of Variance on Class Transiency Subset by Urban/Non-Urban Residence	133
81	Analysis of Variance on Teacher Continuity Subset by Pretest IQ	134
82	Analysis of Variance on Teacher Continuity Subset by Child's Age	135
83	Analysis of Variance on Teacher Continuity Subset by Urban/Non-Urban Residence	136
84	Analysis of Variance on Pupil/Teacher Ratio Subset by Pretest IQ	138
85	Analysis of Variance on Pupil/Teacher Ratio Subset by Child's Age	139
86	Analysis of Variance on Pupil/Teacher Ratio Subset by Urban/Non-Urban Residence	140
87	Analysis of Variance on Teacher's Education Subset by Pretest IQ	141

LIST OF TABLES (Cont'd)

Table		Page
88	Analysis of Variance on Teacher's Education Subset by Child's Age	143
89	Analysis of Variance on Teacher's Education Subset by Urban/Non-Urban Residence	144
90	Analysis of Variance on Teacher's Education Subset by South/Non-South Residence	145
91	Analysis of Variance on Teacher's Experience with Disadvantaged Children Subset by Pretest IQ	147
92	Analysis of Variance on Teacher's Experience with Disadvantaged Children Subset by Child's Age	148
93	Analysis of Variance on Teacher's Experience with Disadvantaged Children Subset by Urban/Non-Urban Residence	149
94	Analysis of Variance on Teacher's Experience with Disadvantaged Children Subset by South/Non-South Residence	150
95	Analysis of Variance on OSCI: Large-Muscle Materials Subset by Pretest IQ	152
96	Analysis of Variance on OSCI: Large-Muscle Materials Subset by Child's Age	153
97	Analysis of Variance on OSCI: Large-Muscle Materials Subset by Urban/Non-Urban Residence	154
98	Analysis of Variance on OSCI: Small-Muscle Materials Subset by Pretest IQ	155
99	Analysis of Variance on OSCI: Small-Muscle Materials Subset by Child's Age	157
100	Analysis of Variance on OSCI: Small-Muscle Materials Subset by Urban/Non-Urban Residence	158
101	Analysis of Variance on OSCI: Language Materials Subset by Pretest IQ	159
102	Analysis of Variance on OSCI: Language Materials Subset by Child's Age	161

LIST OF TABLES (Cont'd)

Table		Page
103	Analysis of Variance on OSCI: Language Materials Subset by Urban/Non-Urban Residence	162
104	Analysis of Variance on OSCI: Dramatic Materials Subset by Pretest IQ	163
105	Analysis of Variance on OSCI: Dramatic Materials Subset by Child's Age	164
106	Analysis of Variance on OSCI: Dramatic Materials Subset by Urban/Non-Urban Residence	165
107	Pretest-Posttest Performance Changes (1966-67)	175
108	Differences in Child Gains Associated with Child's Pretest IQ	178
109	Results of Analyses of Variance on OSCI: Language Materials	181
110	Results of Analyses of Variance on OSCI: Dramatic Materials	183
111	Results of Analyses of Variance on Teacher's Education	184
112	Results of Analyses of Variance on Teacher's Experience with Disadvantaged Children	186
113	Results of Analyses of Variance on OSCI: Large-Muscle Materials	188
114	Results of Analyses of Variance on Pupil/Teacher Ratio	190
115	Results of Analyses of Variance on OSCI: Small-Muscle Materials	191
116	Results of Analyses of Variance on Class Transiency	193
117	Results of Analyses of Variance on Teacher Continuity	195
118	Distribution of Values on Urban/Non-Urban Residence	209
119	Distribution of Values on Child's Sex 1966-67	209
120	Distribution of Values on Child's Age at Entry (Months)	209
121	Distribution of Values on Stanford-Binet (Pre) 1966-67	210

LIST OF TABLES (Cont'd)

Table		Page
122	Distribution of Values on Total Preschool Inventory Percentile (Pre) 1966-67	211
123	Distribution of Values on Personal-Social Responsiveness Percentile (Pre) 1966-67	212
124	Distribution of Values on Associative-Vocabulary Percentile (Pre) 1966-67	213
125	Distribution of Values on Concept Activation - Numerical Percentile (Pre) 1966-67	214
126	Distribution of Values on Concept Activation - Sensory Percentile (Pre) 1966-67	215
127	Distribution of Values on Behavior Inventory: Total Raw Score (Pre) 1966-67	216
128	Distribution of Values on Teacher's Education 1966-67	218
129	Distribution of Values on Teacher's Experience with Preschoolers and Poverty Children 1966-67	218
130	Distribution of Values on Teacher's Social Development Techniques 1966-67	219
131	Distribution of Values on Teacher's Non-Punitiveness 1966-67	221
132	Distribution of Values on Teacher's Academic Orientation 1966-67	222
133	Distribution of Values on Adequacy of Outdoor Play Equipment 1966-67	223
134	Pretest-Posttest Performance Changes (1966-67)	224
135	Differences in Child Gains Associated with Child's Age (1966-67)	227
136	Differences in Child Gains Associated with Child's Pretest IQ (1966-67)	228
137	Differences in Child Gains Associated with Child's Urban/Non-Urban Residence (1966-67)	229

LIST OF TABLES (Cont'd)

Table		Page
138	Differences in Child Gains Associated with Pretest-Posttest Interval (1966-67)	231
139	Results of Analyses of Variance on Teacher's Education (1966-67)	234
140	Results of Analyses of Variance on Teacher's Experience with Preschoolers and Poverty Children (1966-67)	235
141	Results of Analyses of Variance on Teacher's Academic Orientation (1966-67)	236
142	Results of Analyses of Variance on Teacher's Social Development Techniques (1966-67)	237
143	Results of Analyses of Variance on Teacher's Non-Punitiveness (1966-67)	238
144	Results of Analyses of Variance on Adequacy of Outdoor Play Equipment (1966-67)	239
145	Analysis of Variance on Teacher's Education Subset by Pretest IQ (1966-67)	242
146	Analysis of Variance on Teacher's Education Subset by Child's Age (1966-67)	243
147	Analysis of Variance on Teacher's Education Subset by Urban/Non-Urban Residence (1966-67)	244
148	Analysis of Variance on Teacher's Education Subset by Pretest-Posttest Interval (1966-67)	246
149	Analysis of Variance on Teacher's Experience with Preschoolers and Poverty Children Subset by Pretest IQ (1966-67)	247
150	Analysis of Variance on Teacher's Experience with Preschoolers and Poverty Children Subset by Child's Age (1966-67)	248
151	Analysis of Variance on Teacher's Experience with Preschoolers and Poverty Children Subset by Urban/Non-Urban Residence (1966-67)	249
152	Analysis of Variance on Teacher's Social Development Techniques Subset by Pretest IQ (1966-67)	251

LIST OF TABLES (Cont'd)

Table Page

153 Analysis of Variance on Teacher's Social Development Techniques Subset by Urban/Non-Urban Residence (1966-67) 252

154 Analysis of Variance on Teacher's Social Development Techniques Subset by Pretest-Posttest Interval (1966-67) 254

155 Analysis of Variance on Teacher's Academic Orientation Subset by Pretest IQ (1966-67) 255

156 Analysis of Variance on Teacher's Academic Orientation Subset by Child's Age (1966-67) 256

157 Analysis of Variance on Teacher's Academic Orientation Subset by Urban/Non-Urban Residence (1966-67) 257

158 Analysis of Variance on Teacher's Academic Orientation Subset by Pretest-Posttest Interval (1966-67) 258

159 Analysis of Variance on Adequacy of Outdoor Play Equipment Subset by Pretest IQ (1966-67) 260

160 Analysis of Variance on Adequacy of Outdoor Play Equipment Subset by Urban/Non-Urban Residence (1966-67) 261

161 Analysis of Variance on Adequacy of Outdoor Play Equipment Subset by Pretest-Posttest Interval (1966-67) 262

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INTRODUCTION

This is the second of two reports on a National Evaluation of the immediate effects of Project Head Start. An earlier SDC document, TM-4862/000, describes some of the characteristics of children, families, and programs in samples of full-year classes operating in 1968-69. The present supplementary report presents findings from the 1966-67 and 1967-68 samples.

The Head Start National Evaluation was designed to identify pretest-posttest performance changes associated with Head Start participation, and the conditions under which the changes were greatest. There were no control groups of eligible children who did not attend Head Start; the emphasis is on comparisons within the Head Start sample to see what kinds of classroom experiences "work best" for what kinds of children.

The earlier report, TM-4862/000, discusses the goals, history, and development of Project Head Start, and summarizes major findings of prior evaluation and research studies on Head Start and other preschool intervention programs. It also describes the rationale and overall design of the Head Start National Evaluation. As noted in the earlier report, the specific features of the National Evaluation design, the instruments used, and the conditions under which the evaluation data were collected, changed somewhat over the three years of the evaluation effort. Each year's evaluation is thus treated as a separate study. Where appropriate, however, the present report makes comparisons across years, pointing out commonalities and differences in the patterns of child-program interaction effects.

The remainder of this report is organized into two major sections. The first section, consisting of Chapters I through X, describes the analysis and findings of the 1967-68 National Evaluation data; the second section, Chapter XI, describes the results of the 1966-67 evaluation.

CHAPTER I

DESIGN OF THE 1967-68 EVALUATION

The evaluation for the 1967-68 study set the following guidelines for selection of sample children:

- The guideline-eligible children must be enrolled in a program in session from October 1967 through April 1968.
- They must be (on entry) no younger than three years and six months, and no older than four years and nine months.
- They must belong to a class containing at least ten such "new children" (i.e., children without prior full-year preschool experience).

Several criteria were also set for the data-collection procedures:

- The common core instruments must be administered between the second and sixth week after the child enters Head Start, and again at the end of the program.
- Observational data on classroom experiences must be collected throughout the program.
- In 50% of the sample, additional in-depth information must be collected on the child, his family, and his classroom experiences (These data were not part of the "common core" data, and are not included in the present study).

The sample was recruited by 14 Head Start Evaluation and Research (E&R) Centers from delegate agencies, Head Start Center Directors, teachers, and parents who were willing to participate in a year-long evaluation project. Unlike the 1968-69 evaluation effort, there were no direct interventions by the E&R Centers in 1967-68; that is, the E&R Centers did not directly introduce specific intervention programs of their own design or selection. However, the Centers did attempt to select sample classes that varied as widely as possible in anticipated educational approach and child characteristics.

The earlier report, TM-4862/000/01, has discussed some of the major design limitations that apply to all three years of the Head Start National Evaluation, and some implications of those limitations for the analysis and interpretation of the evaluation data. Briefly, the most serious design constraints were as follows:

- The evaluation effort represents a quasi-experimental design, rather than a true experiment. Although numerous research hypotheses concerning possible Head Start program effects were implicit in the nature of the instruments used and the data collected, these hypotheses were not made explicit prior to the data-collection effort. Furthermore, in none of the three years were all children assigned randomly to treatment-conditions, nor were programs selected randomly from the total population of Head Start Centers. Thus it cannot be claimed that the samples of programs and children were, in any rigorous sense, representative of the total Head Start program.
- The National Evaluation did not include a control group of children who had no exposure to Head Start; thus, it is particularly difficult to substantiate cause-and-effect relationships between program variables and performance measures. For this reason, in the analyses reported here, the Head Start experiences are described as "associated with" certain changes in performance, rather than as having caused those changes.
- There were variations among Head Start Centers in the interval between the opening of classes, and the administration of the pretests; similarly, there were variations in the interval between pretest and posttest administrations. Because of the potential impact of the variations on the children's pretest and gain scores, and because of the possible confounding of these variations with the program variables being investigated, the analyses described in the present report include an examination of the intervals and their relationship to performance.

- As later chapters in this report show, there were sizable quantities of missing data on many of the measures. The sample size for a given measure was typically smaller than the total sample by at least two hundred children. Presumably, most of the missing cases represent children who were not present in the classes when the instruments were administered. In other cases, it may have been found too difficult to obtain a particular measure, even though the child was physically present; this evidently was occasionally true for some Spanish-speaking children.

  The danger introduced by the missing data is that the missing cases might represent children who differed in important dimensions from their classmates who were included in the analyses. Furthermore, there is a possibility that the pattern of missing cases for different Head Start Centers and classes might be confounded with certain program variables associated with those classes. Such a confounding effect could conceivably produce spurious statistical relationships between the program variables and the performance measures.

  The missing data problem is one that must be taken into consideration in interpreting the various findings reported in this document. It was not possible within the scope of this study to perform an in-depth examination of the missing cases, so as to determine exactly how much, and in what ways, they differed from the cases included in the analyses. However, Chapter VI does briefly compare the pretest performance of all children having pretest scores, against the pretest performance of those children having both pretest and posttest scores (i.e., the children for whom gain-scores could be calculated); this comparison provides a basis for assessing the magnitude of bias that might be introduced by children who dropped out of the programs before the end of the evaluation period.

CHAPTER II

MEASURES FOR 1967-68 ANALYSIS

This chapter describes the instruments used in the 1967-68 evaluation, and the variables derived from data elements contained in those instruments.

A. INSTRUMENTS

The data collection instruments fall into three general categories:

- Instruments designed to record data on the background and performance of the Head Start children.
- Instruments pertaining to the children's parents and families.
- Instruments pertaining to the Head Start Centers and classes.

1. Instruments Pertaining to Children

The only instrument used in 1967-68 to measure cognitive growth was the Stanford-Binet Intelligence Test. Scores on this instrument, which was administered pre and post, reflect a complex of skills and attitudes, including the child's willingness to cooperate with the examiner, his comprehension of the instructions and tasks, and his general level of intellectual achievement. Stanford-Binet performance has frequently been reported to predict performance in school situations.

Two instruments, the Inventory of Factors Affecting Test Performance and the Social Interaction Observation Procedure, were administered pre and post to provide information about the children's behavior in the social-emotional domain. After administering the Stanford-Binet to a child, the examiner filled in the Inventory of Factors Affecting Test Performance, based on his observations of the child in the test situation. This rating scale describes attitudinal and emotional factors that might have contributed to the child's Stanford-Binet performance; it also provides a measure of the child's ability to adjust to the test conditions.

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The Social Interaction Observation Procedure (SIOP) was developed at the University of Kansas. In this behaviorally oriented procedure, observers recorded in ten-second intervals the social interactions of individual children with peers and adults during free-play situations. The instrument was designed to help answer questions such as whether a child initiated social contacts or was simply a respondent, whether he participated more in interactions with peers or with adults, how much he interacted with peers of other ethnic groups than his own, etc.

Certain additional data on children were recorded on Supplementary Data Cards. These included such information as the children's geographic region and prior Head Start experience.

2. Instrument Pertaining to Parents and Families

Pre and post data on the parents and families were collected on a Parent Interview form that was similar but not identical to the one used in 1968-69. This instrument provides three kinds of data: (1) demographic, such as the mother's age and education, (2) behavioral, such as the mother's participation in community activities, and items intended to provide an index of the child's emotional maturity at home, and (3) dynamic and process factors such as the mother's reported mode of control over the child, her aspirations and expectations for his development, and her attitudes of optimism, alienation, and hopelessness.

3. Instruments Pertaining to Programs

Several forms were used to collect information about the classrooms and staff. The Characteristics of Teaching Staff form contained information about the Head Start teachers and aides, their personal characteristics (sex, age, ethnicity, etc.), their level of education, any special training they received in preparation for their Head Start duties, and type and amount of prior teaching experience. Another form, Description of Center and Classroom Composition, provided information about the number of children and staff members in each classroom, the number of square feet of indoor and outdoor facilities, and the ethnic, sex, and age distributions of children in the classes.

The Observation of Substantive Curricular Input (OSCI) was used to collect more dynamic and interactive data about the actual classroom activities. This instrument, developed by UCLA, is a time-sampling observation designed to provide information on such questions as: What proportion of time is spent in free play? In activities developing small-muscle skills? In small groups?

The 1967-68 OSCI differed from the 1968-69 version in that there were no measures looking specifically at the teacher; i. e., the focus for all of the 1967-68 observations was on what the children themselves were doing, regardless of whether a teacher was interacting with them or directing them.

Certain additional data on the programs were recorded on Master Data Cards; these included information about the class program length, number of class meetings per week, class stability, the head teacher's continuity, the type of delegate agency responsible for the program, the largest ethnic group in the class, etc.

B. PROCEDURES FOR DEFINING VARIABLES

In general, the procedures used to organize the data elements for 1967-68 into meaningful program variables, child variables, and parent variables were the same as those described for the 1968-69 data (TM-4862/000, Chapter V). This process involved (1) the reorganization of data elements by child, rather than by instrument, (2) the recoding of response alternatives for some individual data items, so that the items would provide meaningful scales, and (3) the use of rational analyses (i. e., face validity) and information from earlier studies to define new variables based on combinations of data items.

After all variables were defined, the definitions were incorporated into computer programs that extracted the necessary information from the data tapes and produced a new tape containing, for each child, values for all of the derived variables. This new tape, designated the Master Tape, was the basis for all statistical manipulations of the data.

C. INITIAL SET OF VARIABLES

By the steps summarized above, an initial set of 199 variables was defined. Of this set, 142 variables are "child-oriented" variables, i. e., they are derived from records associated with individual children. These include the types of information described below:

1. Child-Oriented Variables

a. Child Personal and Background Data

Examples of this type of information are the child's sex, ethnicity, age, the degree to which adults read to the child, his area of residence (South/ Non-South), and amount of prior preschool experience. These variables were selected because it was felt of interest to provide descriptive data on the Head Start children at time of entry into the program, as well as to compare performance gains for different subgroups of children.

b. Child's Family

Examples of these variables are mother's and father's education level and occupation, ratio of rooms to people in the home, number of adults in the home, number of children in the home, family mobility, and family structure. The selection of these variables was based on interest in the family origins and environment of the Head Start children, and in the possible relationships between these family variables and the children's gains in Head Start.

c. Timing of Instrument Administration and Period of Head Start Program's Influence

These variables include the interval between the start of the school year and the pretest administration of certain instruments; the pretest-posttest interval; and the child's attendance level. These variables were potentially of interest for their use in determining how the children's performance varied with their period of exposure to the program and with the timing of the tests.

d. Performance Measures on Cognitive and Social-Affective Instruments Administered to the Children

These include both prescores and postscores on each child-oriented instrument described above in Section A. Most of these measures are defined in greater detail, and the rationale for their selection is described in Section E, below.

e. Variables Relating to the Parents' Attitudes

These include data on the parents' aspirations and expectations for their children's subsequent educational attainments; their feeling of personal power (or lack of it); their degree of involvement in Head Start and community activities; and their attitudes toward Head Start and toward education in general.

One reason for interest in these variables was their value in describing the entering characteristics of the parents. Another reason was that some of the variables might profitably be used as dependent variables, to determine whether Head Start experience was associated with beneficial changes in the parent attitudes.

2. Program-Oriented Variables

Another set of variables can be characterized as program-oriented. These variables were derived from instruments maintained by site or class rather than by individual child. The program-oriented variables as a group are vital to this study, because they represent the independent variables whose relationships with the performance measures are to be investigated. In the following discussion, they are organized into several categories of information; the discussion includes examples of variables in each category, and a rationale for selection of the category.

a. Teacher's Personal and Background Variables

These variables are important both to obtain a clear picture of the characteristics and professional backgrounds of the Head Start teachers and aides, and to determine how those characteristics were related to the children's performance. A further reason for including variables in this category is that two such variables (teacher's general education and teacher's paid experience with disadvantaged preschool children) were found significantly associated with performance in the analyses of the 1968-69 data.

The teacher variables defined for 1967-68 thus include background information about the teacher's (or aide's) level of general education; educational training for Head Start programs; and paid teaching experience with young disadvantaged children, with older advantaged children, and with young advantaged children.

b. Program/Curriculum Variables and Classroom Materials

From a logical standpoint, it might be expected that variables reflecting the direct interaction between the program (i. e., the classroom instruction) and the children should be strongly associated with the children's performance. Eleven variables related to actual program activities in the classrooms were derived from the Observation of Substantive Curricular Input (OSCI). Four of these variables represented scores on factors that had been computed by UCLA in its earlier analyses of the OSCI data (Stern, 1969). The other seven OSCI variables were measures of the frequency of observed use of certain types of equipment and materials (e. g., language materials, art materials, small-muscle material) in the classrooms.

D. CORRELATIONAL ANALYSES OF INITIAL SET OF VARIABLES

The earlier report covering the 1968-69 Head Start data (TM-4862/000) describes the rationale and procedures for use of a correlational approach to select, from a large number of independent and dependent variables, a subset of variables for more intensive study using analysis-of-variance techniques. In this approach, the Pearson product-moment correlation is computed between the pretest scores and each program variables. Next, the correlation is computed between the posttest scores and each program variable. The differences between these two correlations are computed and a "t" test is performed on each difference to test the hypothesis of "no difference." The probabilities of differences as large as or larger than the observed differences as large or larger than the observed differences are computed. A significant correlation increase is interpreted as suggestive of a positive (beneficial) relationship between the program variable and the performance measure, and a decrease as a negative relationship. The number of significant relationships that a variable has with other variables is used as one indicator of the possible importance of that variable for inclusion in the analyses of variance.

Tables 1 through 16 show the most important findings from the correlational analyses, which involved 22 independent variables and 16 dependent variables (child and parent measures). Each table shows results for one dependent variable. Table 1, for example, shows results of the correlational analysis for the Stanford-Binet. The left-most column lists all program variables that showed pre-post correlation differences having probabilities of .05 or less. From left to right, the remaining columns show the correlation between the program variables and the pretest IQ scores; the correlations between program variables and posttest scores; and the differences between the two correlations. A negative sign (-) by a number in the "Corr. Diff." column means that the post correlation was smaller than the pre correlation (i. e., that a higher value on the program variable was associated with lower performance); the absence of any sign means that the post correlation was larger, and suggests the possibility of a beneficial effect of the program variable. A double asterisk (**) by a correlation difference signifies that the chance probability of occurrence of a difference of that size or larger is no greater than .01; a single asterisk (*) designates a probability of no greater than .05.

E. SELECTION OF SUBSET OF VARIABLES FOR ANALYSES OF VARIANCE

As described in the preceding section, tests were performed on pre-post differences in correlation between each of the potential independent variables, and each of the potential dependent variables. The results of this correlational analysis were then used, along with several other criteria, to winnow the variables down to a number that would be manageable within the limits of the project, and at the same time would give some reasonable promise of showing significant relationships between independent and dependent variables in subsequent analyses of variance.

Table 1

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON STANFORD-BINET

Independent Variables	Corr. Pre	Corr. Post	Corr. Diff.
Class Transiency	-0.02	-0.10	-0.08**
Teacher Continuity	0.00	0.05	0.05*
OSCI - Art Materials	0.00	0.04	0.04*
Pupil/Teacher Ratio	-0.04	0.00	0.04*

* Designates a correlation difference with probability less than .05

** Designates a correlation difference with probability less than .01

Table 2

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON FACTORS AFFECTING TEST PERFORMANCE (FATP)

Independent Variables	Corr. Pre	Corr. Post	Corr. Diff.
Pupil/Teacher Ratio	0.06	-0.07	-0.13**
Teacher Continuity	0.04	0.13	0.09**
OSCI - Small-Muscle Materials	-0.12	-0.03	0.09**
Teacher Education	0.03	-0.06	-0.09**
OSCI - Language Materials	-0.10	-0.02	0.08**
Experience with Disadvantaged Children	-0.02	-0.11	-0.09**
Outdoor Square Feet	0.00	0.08	0.08**
Experience with Disadvantaged Children	-0.04	-0.11	-0.07*
OSCI Factor I (Cognitive, Low Structure)	0.00	0.06	0.06*

* Designates a correlation difference with probability less than .05

** Designates a correlation difference with probability less than .01

Table 3

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON SIOP - TOTAL VERBAL BEHAVIOR

Independent Variables	Corr. Pre	Corr. Post	Corr. Diff.
Teacher Education	0.13	-0.01	-0.14**
Class Transiency	0.14	0.02	-0.12**
OSCI - Large-Muscle Materials	0.08	-0.01	-0.09**
OSCI - Dramatic Materials	0.00	0.09	0.09**
OSCI - Small-Muscle Materials	-0.06	-0.13	-0.07*
Pupil/Teacher Ratio	-0.05	0.02	0.07*

* Designates a correlation difference with probability less than .05

** Designates a correlation difference with probability less than .01

Table 4

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON SIOP - TOTAL NON-VERBAL BEHAVIOR

Independent Variables	Corr. Pre	Corr. Post	Corr. Diff.
OSCI - Language Materials	-0.05	0.11	0.16**
OSCI - Music Materials	0.01	0.10	0.09**
OSCI - Small-Muscle Materials	0.00	0.08	0.08*
Teacher Education	-0.18	-0.10	0.08*

Table 5

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON SIOP - TOTAL INAPPROPRIATE BEHAVIOR

Independent Variables	Corr. Pre	Corr. Post	Corr. Diff.
Experience with Advantaged Children	0.06	-0.08	-0.14**
Experience with Disadvantaged Children	0.03	-0.09	-0.12*

* Designates a correlation difference with probability less than .05

** Designates a correlation difference with probability less than .01

Table 6

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON SIOP - INITIATIONS BY SUBJECT TO PEERS OF SAME ETHNIC GROUP

Independent Variables	Corr. Pre	Corr. Post	Corr. Diff.
Pupil/Teacher Ratio	0.12	-0.07	-0.19**
Class Transiency	0.03	-0.10	-0.13**
Experience with Disadvantaged Children	0.11	-0.03	-0.14**
Experience with Advantaged Children	0.09	-0.02	-0.11**
OSCI - Large-Muscle Materials	0.01	-0.08	-0.09**
OSCI - Science Materials	0.03	0.11	0.08**
Teacher Education	0.08	-0.01	-0.09*

* Designates a correlation difference with probability less than .05

** Designates a correlation difference with probability less than .01

Table 7

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON SIOP - INITIATIONS BY SUBJECT TO PEERS OF OTHER ETHNIC GROUP

Independent Variables	Corr. Pre	Corr. Post	Corr. Diff.
Experience with Disadvantaged Children	-0.11	-0.19	-0.08**
Class Transiency	-0.06	-0.13	-0.07**
Experience with Advantaged Children	-0.11	-0.18	-0.07*
OSCI - Small-Muscle Materials	-0.02	0.04	0.06*
Pupil/Teacher Ratio	-0.03	-0.09	-0.06*
OSCI - Factor III (Cognitive, High Structure)	0.02	-0.03	-0.05*

* Designates a correlation difference with probability less than .05

** Designates a correlation difference with probability less than .01

Table 8

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON SIOP - INITIATION TO SUBJECT BY SAME ETHNIC GROUP PEERS

Independent Variables	Corr. Pre	Corr. Post	Corr. Diff.
OSCI - Large-Muscle Materials	0.03	-0.08	-0.11**
Experience with Disadvantaged Children	0.12	0.00	-0.12**
Experience with Advantaged Children	0.12	0.01	-0.11**
Pupil/Teacher Ratio	0.06	-0.04	-0.10**
OSCI - Small-Muscle Materials	-0.12	-0.04	0.08**
Class Transiency	-0.03	-0.10	-0.07*
OSCI - Science Materials	0.06	0.12	0.06*

* Designates a correlation difference with probability less than .05

** Designates a correlation difference with probability less than .01

Table 9

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON SIOP - INITIATION TO SUBJECT BY OTHER ETHNIC GROUP PEERS

Independent Variables	Corr. Pre	Corr. Post	Corr. Diff.
Experience with Disadvantaged Children	-0.10	-0.19	-0.09**
Experience with Advantaged Children	-0.10	-0.17	-0.07**
OSCI - Dramatic Materials	-0.05	-0.10	-0.05**

Table 10

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON PARENT'S ESTIMATE OF HEAD START BENEFITS TO CHILD

Independent Variables	Corr. Pre	Corr. Post	Corr. Diff.
Class Transiency	0.01	0.10	0.09**
OSCI - Dramatic Materials	-0.03	0.06	0.09**
OSCI - Music Materials	-0.07	0.01	0.08**
OSCI - Large-Muscle Materials	-0.15	-0.21	-0.06*
OSCI - Small-Muscle Materials	0.07	0.02	-0.05*

* Designates a correlation difference with probability less than .05

** Designates a correlation difference with probability less than .01

Table 11

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON PARENT'S EDUCATIONAL ASPIRATIONS FOR CHILD

Independent Variables	Corr. Pre	Corr. Post	Corr. Diff.
Experience with Advantaged Children	0.09	-0.01	-0.10**
Experience with Disadvantaged Children	0.10	0.00	-0.10**
Class Transiency	0.01	0.08	0.07**

** Designates a correlation difference with probability less than .01

Table 12

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON PARENT'S EDUCATIONAL EXPECTATIONS FOR CHILD

There were no significant correlation differences for this dependent variable.

Table 13

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON DISPARITY IN PARENT'S ASPIRATIONS AND EXPECTATIONS FOR CHILD

Independent Variables	Corr. Pre	Corr. Post	Corr. Diff.
OSCI - Music Materials	0.08	-0.05	-0.13**
Outdoor Square Feet	-0.06	0.04	0.10**
OSCI - Large-Muscle Equipment	0.10	0.01	-0.09**
Pupil/Teacher Ratio	0.08	-0.02	-0.10**
OSCI - Language Materials	0.07	-0.01	-0.08*
Class Transiency	-0.03	0.05	0.08*

* Designates a correlation difference with probability less than .05

** Designates a correlation difference with probability less than .01

Table 14

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON PARENT'S ESTIMATE OF CHILD'S FEAR REACTIONS

Independent Variables	Corr. Pre	Corr. Post	Corr. Diff.
Experience with Advantaged Children	-0.12	-0.03	0.09**
Experience with Disadvantaged Children	-0.09	-0.01	0.08**
Class Transiency	-0.04	-0.09	-0.05*

Table 15

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON PARENT'S FEELING OF VALUE OF EDUCATION

Independent Variables	Corr. Pre	Corr. Post	Corr. Diff.
OSCI - Language Materials	-0.09	-0.03	0.06*
OSCI - Music Materials	-0.04	0.01	0.05*

Table 16

PRE VS. POST CORRELATIONS BETWEEN INDEPENDENT VARIABLES AND VALUES ON MOTHER'S INVOLVEMENT IN COMMUNITY

Independent Variables	Corr. Pre	Corr. Post	Corr. Diff.
OSCI - Language Materials	0.03	-0.04	-0.07**
OSCI - Small-Muscle Materials	0.10	0.04	-0.06*

* Designates a correlation difference with probability less than .05

** Designates a correlation difference with probability less than .01

One screening criterion used in selecting the final subset of variables was whether the pre-post correlation differences reached statistical significance. For example, all of the four OSCI factor scores showed virtually no significant pre-post differences in correlation with dependent variables, and they were eliminated from further analyses. One or two dependent variables were also eliminated for this reason (e.g., Parent's Educational Expectations for Child, and Parent's Estimate of Child's Fear Reactions).

Another consideration in the selection of variables was related to the findings from the 1968-69 data. One of the goals of the present analysis was to determine whether relationships found in the 1968-69 data were also present in the 1967-68 data. Thus, priority was given to variables such as Teacher's Education, and Teacher's Experience with Disadvantaged Children, since these were similar to variables in the 1968-69 data that were significantly related to children's performance.

Nine program variables and nine performance variables were finally selected for more intensive study by analyses of variance. These variables are described in the remainder of this chapter.

PROGRAM VARIABLES

1. Class-Staff Composition and Stability

a. Pupil/Teacher Ratio

This is a derived scale, calculated by dividing the total number of children on the class roster by the number of teachers assigned to that class.

b. Class Transiency

High scores indicate that many children who were on the class roster at the beginning of the year's program were no longer on that roster at the end of the year. For example, a scaled value of 9 indicates that fewer than 15% of the originally assigned children were still on the roster at the year's end; at the other end of the scale, a value of 1 indicates that 85% or more of the same children were still assigned.

c. Teacher Continuity

Values on this scale indicate the head teacher's continuity in the class during the evaluation period. A scaled value of 4 designates a class in which the same teacher who started the program year was present at the end of the year; by contrast, a value of 3 means that there was one change in teachers, a value of 2 means that there were two changes, and a value of 1 means that there were three or more changes.

2. Teacher's Training and Experience

a. Teacher's Education

This variable indicates the education level of the highest-educated teacher in the classroom (generally the head teacher). A scaled value of 8 designates a teacher who has completed 17 or more years (i.e., graduate work); a value of 7 indicates completion of 15 or 16 years; a value of 6 means 13 or 14 years; and so on down to a value of 1, which means no completed years of schooling.

b. Teacher's Experience with Disadvantaged Children

A score on this derived variable is an average figure across all teachers in the class. It approximates the total number of months of paid experience that the average teacher has had in working with Head Start children, with other disadvantaged preschoolers, and with older disadvantaged children.

3. Materials in Use in the Classrooms

The four variables in this category were all derived from the OSCI observation forms. Each variable indicates the total number of times that the specified type of material was sighted in actual classroom use, divided by the number of observation periods in which it could have been signted, and then multiplied by 100 to convert it to a percentage. Thus a score of 20 for "Language Materials" would mean that in one observation out of five, on the average, some type of language-instruction material was observed in use.

The types of materials represented by the four OSCI variables are (1) language-oriented materials (e.g., books, records, or tapes with dialog), (2) materials for use in dramatic play-acting and role-playing (e.g., story records, puppets), (3) materials and equipment designed to exercise the children's small muscles (e.g., puzzles, string beads, table blocks), and (4) materials and equipment designed to exercise large muscles (e.g., balls, swings).

DEPENDENT (PERFORMANCE) VARIABLES

These variables can be grouped into three major categories: child cognitive behavior, child affective/social behavior, and parent attitudes and behavior.

1. Child Cognitive Behavior

Cognitive development is an important Head Start goal, and much earlier research has been addressed to the question of program effects on cognitive and aptitude measures. The Stanford-Binet, the only cognitive measure used in 1967-68, is considered to reflect motivational as well as basic aptitude factors. The IQ scores used in this study were taken directly from the Binet recording form.

2. Child Affective/Social Behavior

Social and emotional development has been considered a major objective of Head Start since its inception, and in 1967-68 two basic techniques were used to get pre and post measures in this domain. One was the Inventory of Factors Affecting Test Performance, completed by the Stanford-Binet administrator; the second was the Social Interaction Observation Procedure (SIOP), from which five measures were derived for the present analyses.

a. Inventory of Factors Affecting Test Performance

This is a computed summary score indicating the extent to which the child's test performance is adversely affected by the test; by the examiner; and by generalized response conditions in the child himself, such as an excessively high or low level of activity or verbal expression, or inadequate usage of English. The score is calculated by adding the rescaled values of 13 items, each of which can have a value from 1 to 6. If the examiner has indicated that a given condition "Seriously" impairs the child's performance, that item is scaled at 1 point; mildly or moderately detrimental effects are given intermediate values; and a value of 6 points is given to an item if the condition is stated to have "No adverse affect." Thus a high total score indicates that the test, the examiner, and the child's own generalized response traits have little or no adverse effect on the child's Binet performance, and suggests that the child adjusts well to the demands of the test situation. The maximum possible total value is 78.

b. SIOP: Total Verbal Behavior

This and the following four variables were derived from observations made during free-play situations and recorded on the SIOP. A score on Total Verbal Behavior is the total number of ten-second observation intervals in which the target child was seen to engage in any type of verbal behavior, whether with an adult, with a peer, or in general group interactions. There were 270 ten-second observation periods, and the possible range of scores was 0 to 270.

c. SIOP: Total Non-Verbal Behavior

This variable indicates the number of observation periods (out of a total of 270) in which the target child was seen to interact socially with other individuals (peers or adults) in non-verbal ways (e.g., playing games, play-acting with other children, working with peers to build things out of blocks).

d. SIOP: Total Inappropriate Behavior

This variable shows the number of times in which the target child interacted in an inappropriate manner (e.g., fighting, screaming, name-calling) with either peers or adults.

e. SIOP: Initiations by Subject to Peers of Same Ethnic Group

A score on this variable designates the number of times in which the target child was seen to take the initiative in interacting socially with one or more other children of the same ethnic group. This interaction could be either verbal or non-verbal.

f. SIOP: Initiations by Subject to Peers of Other Ethnic Group

This variable indicates the number of times in which the target child was seen to initiate verbal or non-verbal interactions with classmates of another ethnic group.

3. Parent Attitudes

A number of items from the Parent Interview form were used to construct two variables reflecting parents' attitudinal values that might have been affected by their children's participation in Head Start.

a. Perceived Effect of Head Start on Child

This variable is derived from six items in the Parent Interview, related to the parent's estimate of how the child's behavior has been changed by Head Start. Five items pertain to program benefits (e.g., "Speaks better," "More self-confident," "Interested in new things"), and one item designates a harmful program effect (i.e., "Causes more trouble at home"). Scores on this variable were computed by adding the number of positive items affirmatively responded to by the parent, then subtracting 1 if the negative item was agreed to, and finally adding 1 to the sum to avoid negative numbers. Thus the possible range of scores was 0 to 7, with a high score indicating positive Head Start benifits as perceived by the parent.

b. Educational Aspirations for Child

This variable, derived from a single item on the Parent Interview, specifies the level of schooling that the parent hoped for her child to complete. It was included for further analysis because of the possibility that it would reflect the parent's general level of ambition for the Head Start child's future, and because the correlational analysis suggested relationships with several program variables.

The possible range of scores is 1 to 9, with 9 indicating work at a graduate school, 8 representing the completion of a bachelor's degree, 7 some college, 6 completion of high school, etc.

CHAPTER III

THE CHILDREN: ENTERING CHARACTERISTICS

This chapter presents descriptive data on a number of personal and background characteristics of the entering Head Start children, and on their pretest performance levels on several cognitive and affective measures. In addition, comparisons are made between the entry performance of children with prior Head Start experience, and that of children without prior experience.

A. PERSONAL AND BACKGROUND CHARACTERISTICS

1. Geographic Region of Residence (Table 17)

Approximately a fourth (23.72%) of the sample Head Start children lived in the South; that is, in the South Atlantic, East South Central, or West South Central portion of the country. (This represents a smaller proportion than in 1968-69, when 34.50% of the children were from the South.) Other states accounted for the remaining children, with approximately a fourth of the total sample (25.66%) coming from the populous Middle Atlantic region.

2. Urban/Non-Urban Residence (Table 18)

There were slightly more sample children from non-urban areas (suburbs, rural areas, and cities of under 50,000 population) than from urban areas (cities of 50,000 population or larger). This is in contrast to 1968-69, when over three-fourths of the children were from urban areas.

3. Ethnicity (Table 19)

Slightly fewer than half (48.81%) of the Head Start enrollees were black, as compared with over two-thirds in 1968-69. The next largest group consisted of whites (30.92%), and there were significant numbers of Mexican-Americans (6.70%). All other groups combined contributed only 12.57% of the enrollment.

Table 17

DISTRIBUTION OF VALUES ON
CHILD'S GEOGRAPHIC REGION

	Freq.	Percentage of Non-Blanks
Pacific	302	14.96
Mountain	113	5.60
West South Central	166	8.22
East South Central	168	8.32
South Atlantic	145	7.18
West North Central	102	5.05
East North Central	313	15.50
New England	192	9.51
Middle Atlantic	518	25.66
	N = 2019	

Table 18

DISTRIBUTION OF VALUES ON URBAN/NON-URBAN RESIDENCY

	Freq.	Percentage of Non-Blanks
Urban	890	45.13
Non-Urban	1082	54.87
	N = 1972	

Table 19

DISTRIBUTION OF VALUES ON CHILD'S ETHNICITY

	Freq.	Percentage of Non-Blanks
Negro	1034	49.81
White	642	30.92
Mexican-American	139	6.70
American Indian	87	4.19
Polynesian	83	4.00
Puerto Rican	43	2.07
Oriental	38	1.83
Other	10	0.48
	N = 2076	

4. Child's Age (Table 20)

At the start of the evaluation period, almost two-thirds of the children (64.1%) were between four and five years old, and the overall median age was around 52 months. By comparison, in 1968-69 the median was similar, but there was a smaller concentration of children (approximately 50%) in the age range from four to five years.

5. Child's Sex (Table 21)

As in 1968-69, the children were almost evenly divided between males (50.47%) and females (49.53%).

6. Child's Prior Head Start Experience (Table 22)

The great majority of the sample children (85.43%) had had no prior Head Start experience.

7. Amount of Adult Reading to Child in Home (Table 23)

This variable was derived from two items in the Parent Interview, related to how often the target child was read to by an adult in the home. For approximately a third of the children (30.48%), the frequency was two or three times a week. About half the children (48.32%) were reportedly read to once or twice each week. The remaining children were read to less than once a week.

B. PRETEST PERFORMANCE

1. Cognitive Performance (Stanford-Binet IQ)

As shown in Table 24, the Head Start children at pretest time had IQ's ranging from below 55 to over 134. The mean value was 91.42, slightly higher than the 1968-69 pretest mean of 89.04, but still substantially below the overall national average of 100.

Table 20

DISTRIBUTION OF VALUES ON CHILD'S AGE AT ENTRY (MONTHS)

Values	Freq.	Percentage of Non-Blanks
Over 71	11	0.6
60 - 71	272	14.8
48 - 59	1177	64.1
36 - 47	376	20.5
	N = 1836	

Table 21

DISTRIBUTION OF VALUES ON CHILD'S SEX

	Freq.	Percentage of Non-Blanks
Female	996	49.53
Male	1015	50.47
	N = 2011	

Table 22

DISTRIBUTION OF VALUES ON CHILD'S PRIOR HEAD START EXPERIENCE

	Freq.	Percentage of Non-Blanks
Full year	13	1.10
Summer	160	13.48
None	1014	85.43
	N = 1187	

Table 23

DISTRIBUTION OF VALUES ON ADULT READING TO CHILD (PRE)

Values	Freq.	Percentage of Non-Blanks
At least two or three times a week	526	30.48
Once or twice a week	834	48.32
Once every two weeks	197	11.41
Less than once every two weeks	169	9.79
	N = 1726	

Table 24

DISTRIBUTION OF VALUES ON STANFORD-BINET (PRE)

Values	Freq.	Percentage of Non-Blanks
Above 134	3	0.15
130 - 134	4	0.22
125 - 129	12	0.65
120 - 124	22	1.20
115 - 119	47	2.57
110 - 114	59	3.22
105 - 109	160	8.77
100 - 104	172	9.43
95 - 99	257	14.08
90 - 94	281	15.41
85 - 89	275	15.08
80 - 84	201	11.02
75 - 79	142	7.80
70 - 74	91	4.99
65 - 69	47	2.57
60 - 64	25	1.37
55 - 59	16	0.87
Below 55	10	0.52

N = 1824

MEAN = 91.42

SD = 13.68

2. Social-Emotional Measures

a. Inventory of Factors Affecting Test Performance (Table 25)

Values on this measure suggest that, as in 1968-69, the entering Head Start children in 1967-68 adapted fairly well to the Stanford-Binet test conditions and were only moderately distracted by the circumstances related to the examiner or to the test itself. The median value recorded by the examiners was approximately 60, in a possible range of 0 to 78. There was considerable variability, however, with scores ranging from 12 to 73.

b. SIOP-Total Verbal Behavior (Table 26)

The median value on this variable was approximately 35 on a scale of 0 to 270. A child at this median value was thus observed in verbal interaction with peers or teachers roughly once in every eight 10-second observation periods. Scores ranged fairly broadly, with 6.09% of the children observed in verbal behavior at least 90 times, or once in every three observations.

c. SIOP-Total Non-Verbal Behavior (Table 27)

Social interactions of a non-verbal nature were less common than verbal interactions, as indicated by a median value of only about 9 on this variable; this represents an observed occurrence of non-verbal social interactions in only about one observation period out of thirty.

d. SIOP-Total Inappropriate Behavior (Table 28)

Values on this variable represent observed occurrences of undesirable social interactions such as screaming, fighting and name-calling. The distribution shows that very few such incidents were observed; for almost three-fourths of the children (72.85%) there were fewer than two such occurrences.

Table 25

DISTRIBUTION OF VALUES ON FACTORS AFFECTING TEST PERFORMANCE (PRE)

Values	Freq.	Percentage of Non-Blanks
70 - 74	151	8.43
65 - 69	468	26.12
60 - 64	366	20.41
55 - 59	229	12.78
50 - 54	153	8.53
45 - 49	117	6.53
40 - 44	89	4.97
35 - 39	78	4.35
30 - 34	63	3.51
25 - 29	36	2.01
20 - 24	22	1.22
15 - 19	18	1.00
10 - 14	2	0.12
	N = 1792	

Table 26

DISTRIBUTION OF VALUES ON SIOP:
TOTAL VERBAL BEHAVIOR (PRE)

Values *	Freq.	Percentage of Non-Blanks
Above 139	9	0.50
130 - 139	4	0.22
120 - 129	6	0.33
110 - 119	19	1.05
100 - 109	22	1.22
90 - 99	31	1.72
80 - 89	56	3.11
70 - 79	72	4.00
60 - 69	120	6.66
50 - 59	168	9.32
40 - 49	255	14.13
30 - 39	304	16.86
20 - 29	291	16.14
10 - 19	262	14.53
0 - 9	184	10.21
	N = 1803	

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*A value on this scale represents the number of observation periods, out of a possible 270 opportunities, in which the behavior in question was actually seen to occur. Thus a value of 135 means that the behavior was seen in one out of two 10-second observation periods, a value of 90 means that it was seen in one out of three periods, etc.

Table 27

DISTRIBUTION OF VALUES ON SIOP:
TOTAL NON-VERBAL BEHAVIOR (PRE)

Values*	Freq.	Percentage of Non-Blanks
Above 74	3	0.18
70 - 74	4	0.23
65 - 69	1	0.06
60 - 64	9	0.50
55 - 59	12	0.67
50 - 54	12	0.67
45 - 49	14	0.79
40 - 44	22	1.22
35 - 39	39	2.16
30 - 34	53	2.93
25 - 29	77	4.27
20 - 24	141	7.81
15 - 19	183	10.13
10 - 14	308	17.06
5 - 9	449	24.86
0 - 4	479	26.53
	N = 1806	

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*A value on this scale represents the number of observation periods, out of a possible 270 opportunities, in which the behavior in question was actually seen to occur. Thus a value of 135 means that the behavior was seen in one out of two 10-second observation periods, a value of 90 means that it was seen in one out of three periods, etc.

Table 28

DISTRIBUTION OF VALUES ON SIOP: TOTAL INAPPROPRIATE BEHAVIOR (PRE)

Values*	Freq.	Percentage of Non-Blanks
Above 19	5	0.35
18 - 19	2	0.14
16 - 17	5	0.35
14 - 15	4	0.28
12 - 13	6	0.42
10 - 11	6	0.42
8 - 9	21	1.49
6 - 7	37	2.62
4 - 5	66	4.67
2 - 3	231	16.37
0 - 1	1028	72.85
	N = 1411	

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*A value on this scale represents the number of observation periods, out of a possible 270 opportunities, in which the behavior in question was actually seen to occur. Thus a value of 9 means that the behavior was seen in one out of 30 10-second observation periods, a value of 3 means that it was seen in one out of 90 periods, etc.

e. SIOP-Initiations by Subject to Peers of Same Ethnic Group (Table 29)

The median value on this variable is about 10. A child at this median value initiated social interactions with other children of his own ethnic group approximately once in every 270 observation periods.

f. SIOP-Initiations by Subject to Peers of Other Ethnic Group (Table 30)

Overall, there were few initiations of social interactions with peers of another ethnic group, as indicated by the fact that almost three-fourths of the children (70.33%) made fewer than five such initiations in the 270 observation periods. Only 6.01% of the children initiated more than 14 social interactions with peers of another ethnic group.

C. ENTRY CHARACTERISTICS RELATED TO PRIOR HEAD START EXPERIENCE

In the analyses of the 1968-69 data it was found that children with prior preschool experience had an initial advantage over other children when they entered the evaluation period. Was this also true in 1967-68? To answer this question, the pretest scores of two groups of the sample children were compared by two-tailed t-tests. One group had no prior Head Start experience; the second group had some prior experience, in most cases a summer program. Table 31 shows the results of the comparisons, based on the sample of children for whom there were both pretest and posttest measures. From left to right, the table columns contain the sample size, mean, and standard deviation for the "No Prior Head Start" group; the corresponding figures for the "Prior Head Start" group; and the t-values for the differences between each pair of means. Differences meeting the .01 and .05 levels of significance are designated by double asterisks (**) and single asterisks (*), respectively.

The comparisons show mixed results. The "Prior Head Start" children did not differ significantly from "No Prior Head Start" children on pretest IQ, though there were suggestive differences in favor of the group with prior experience. This contrasts with the 1968-69 analysis, in which children with prior Head Start/preschool experience were found significantly superior on Stanford-Binet entry performance (.05 level).

Table 29

DISTRIBUTION OF VALUES ON SIOP: INITIATIONS BY SUBJECT TO PEERS OF SAME ETHNIC GROUP (PRE)

Values*	Freq.	Percentage of Non-Blanks
Above 64	1	0.06
60 - 64	2	0.12
55 - 59	2	0.12
50 - 54	1	0.06
45 - 49	4	0.24
40 - 44	10	0.60
35 - 39	22	1.32
30 - 34	39	2.34
25 - 29	91	5.51
20 - 24	154	9.32
15 - 19	254	15.38
10 - 14	339	20.51
5 - 9	389	23.54
0 - 4	344	20.82
	N = 1652	

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*A value on this scale represents the number of observation periods, out of a possible 270 opportunities, in which the behavior in question was actually seen to occur. Thus a value of 30 means that the behavior was seen in one out of nine 10-second observation periods, a value of 9 means that it was seen in one out of 30 periods, etc.

Table 30

DISTRIBUTION OF VALUES ON SIOP:
INITIATIONS BY SUBJECT TO PEERS OF OTHER ETHNIC GROUP (PRE)

Values*	Freq.	Percentage of Non-Blanks
Above 44	2	0.14
40 - 44	1	0.07
35 - 39	0	0.00
30 - 34	4	0.27
25 - 29	8	0.53
20 - 24	27	1.77
15 - 19	50	3.27
10 - 14	118	7.71
5 - 9	244	15.95
0 - 4	1076	70.33
	N = 1530	

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*A value on this scale represents the number of observation periods, out of a possible 270 opportunities, in which the behavior in question was actually seen to occur. Thus a value of 30 means that the behavior was seen in one out of nine 10-second observation periods, a value of 9 means that it was seen in one out of 30 periods, etc.

Table 31

COMPARISON OF PRETEST SCORES FOR CHILDREN WITH AND WITHOUT PRIOR HEAD START EXPERIENCE

	No Prior Head Start			Prior Head Start			
Dependent Variable	N_2	M_2	SD_2	N_1	M_1	SD_1	t
Stanford-Binet	917	89.58	13.34	165	90.83	12.91	1.18
Factors Affecting Test Performance	892	55.76	11.74	167	51.87	13.63	-3.82**
SIOP: Total Verbal Behavior	907	37.67	24.84	160	45.67	36.81	3.45**
SIOP: Total Non-Verbal Behavior	916	12.46	12.91	162	15.13	13.45	2.41*
SIOP: Total Inappropriate Behavior	754	1.29	2.88	122	1.77	3.43	1.65
SIOP: Initiations by Subject to Peers of Same Ethnic Group	808	11.31	8.69	153	16.03	10.78	5.91**
SIOP: Initiations by Subject to Peers of Other Ethnic Groups	812	4.05	4.99	123	3.11	4.55	-1.97*

One possible explanation for the difference in findings for the two years may lie in the fact that in 1968-69, there were almost as many entering children with prior full-year experience as there were children with prior summer program experience; in 1967-68, by comparison, virtually none of the children had had prior full year experience. Thus, on the average, the "Prior Head Start" child entering in 1968-69 had had a lengthier exposure to the possible benefits of the Head Start.

In the social-emotional domain, entering children with prior Head Start experience were more socially active, as measured on the SIOP by the number of times that they participated in both verbal (.01 level of significance) and non-verbal (.05 level) social interactions with adults and peers. Furthermore, they took greater social initiative, as measured by the number of social interactions that they initiated with other children of their same ethnic group (.01 level). However, the "Prior Head Start" children also showed significantly poorer adaptation to the Stanford-Binet test conditions (.01 level), as recorded by the examiner on the Inventory of Factors Affecting Test Performance. They also initiated fewer social interactions with peers of other ethnic groups, than did entering children without prior Head Start experience (.05 level). All of these findings must be interpreted with caution, since it is not known that the children with prior preschool experience were initially matched to the children who had not received such experience.

D. SUMMARY

As in the 1968-69 analysis, the entering children in 1967-68 showed considerable diversity on a number of dimensions, both in terms of personal characteristics and background, and in their entry performance on various measures. As compared with 1968-69, there was a smaller proportion of black children (49.81% against 68.17% in 1968-69), a smaller percentage of children from the South (23.72% against 34.50%), and a much smaller percentage from urban areas (45.13% against 77.28%). Most enrollees (85.43%) had had no Head Start experience prior to the evaluation period, and judging from the low frequency with which adults read to them in their homes, most of the children had received little intellectual stimulation in their home environments. There was no clear trend showing overall superiority for entering children who had attended summer Head Start programs prior to the evaluation period.

Only one of the performance measures (the Stanford-Binet) has national norms for the general population, and only two instruments (Stanford-Binet and Inventory of Factors Affecting Test Performance) were exactly comparable to measures used in 1968-69. On the Stanford-Binet, the pretest mean in 1967-68 was slightly higher than in 1968-69 (91.42 compared with 89.04), but still appreciably below the national norm of 100. On the Inventory of Factors Affecting Test Performance, the entering children in 1967-68 had a mean of 56.72, compared with a mean in 1968-69 of 59.45.

CHAPTER IV

THEIR FAMILIES: ENTERING CHARACTERISTICS

This chapter is concerned with the Head Start children's families and home environments. It presents frequency distributions on several variables related to the entry characteristics of the sample children's families, with emphasis on the parents' attitudes about Head Start.

A. SOCIO-ECONOMIC INDICATORS

1. Mother's Education (Table 32)

Only about a third of the sample mothers (36.94%) had completed high school. Another 53.91% had dropped out of secondary school before completing the 12th grade, and over 9% finished the 6th grade or less. These figures are similar to those for 1968-69.

2. Mother's Occupation (Table 33)

Almost a third of the sample mothers (31.49%) had jobs. However, few of the working mothers (131 out of 415) reached the semi-skilled worker level or higher, and 168 mothers were household workers or laborers.

3. Father's Education (Table 34)

About a third (33.73%) of the fathers on whom data were available had completed high school, and only 6.39% had gone on to college. Almost a fifth of the fathers (17.63%) finished the 6th grade or less.

4. Father's Occupation (Table 35)

Data on this variable were missing for fathers of over half the sample children. For those on whom data were available, 14.76% were apparently unemployed, and almost two-fifths (38.22%) were laborers or service workers. Fewer than a fourth (24.20%) were employed at a skilled or technical level.

Table 32

DISTRIBUTION OF VALUES ON MOTHER'S EDUCATION

	Freq.	Percentage of Non-Blanks
College graduate	13	0.91
Some college	59	4.12
High school graduate	457	31.91
9-11th grade	555	38.76
7-8th grade	217	15.15
4-6th grade	100	6.98
1-3rd grade	18	1.26
No school	13	0.91
	N = 1432	

Table 33

DISTRIBUTION OF VALUES ON MOTHER'S OCCUPATION

	Freq.	Percentage of Non-Blanks
Professional, technical	63	4.78
Operator, private household worker	68	5.16
Service worker or laborer	116	8.80
Household worker or laborer	168	12.75
Housewife	903	68.51
	N = 1318	

Table 34

DISTRIBUTION OF VALUES ON FATHER'S EDUCATION

	Freq.	Percentage of Non-Blanks
College graduate	20	1.80
Some college	51	4.59
High school graduate	304	27.34
9-11th grade	331	29.77
7-8th grade	210	18.88
4-6th grade	122	10.97
1-3rd grade	49	4.41
No school	25	2.25
	N = 1112	

Table 35

DISTRIBUTION OF VALUES ON FATHER'S OCCUPATION

	Freq.	Percentage of Non-Blanks
Professional, technical	67	6.14
Sales, clerical, skilled	197	18.06
Operator, private household worker	249	22.82
Laborer, service worker	417	38.22
None indicated	161	14.76
	N = 1091	

B. OTHER FAMILY CHARACTERISTICS

1. Family Structure (Table 36)

In about three-fifth of the sample families (57.67%) the adults living with the Head Start child included the mother plus the father or another man. The second most frequent family structure (21.75%) included only one adult, the mother.

2. Family Mobility (Table 37)

The sample families were fairly mobile, as indicated by the fact that almost a third (32.60%) had moved three or more times over a five-year period, and 17.70% had moved five times or more.

3. Other Children Previously in Head Start (Table 38)

Over a fourth of the sample families on whom data were available had previously had children in Head Start. However, no data were recorded for almost three-fifth of the sample families.

C. PARENT ATTITUDES

1. Perceived Effect of Head Start on Child (Table 39)

The possible range of scores on this measure is 0 to 7. A score of 7 means that in the Parent Interview the parent agreed with five positive statements about program benefits to her child (e.g., the child speaks better, is more self-confident, etc.), and rejected a negative statement (i.e., that the Head Start experience had created more trouble in the home). A score of 0 means that the parent agreed with the negative statement and disagreed with all five positive statements. Intermediate values reflect various combinations of positive and negative statements. Since the prescores shown here were obtained at the start of the evaluation period, the responses presumably reflect anticipated program effects, based in some cases on the parents' experiences with children previously in Head Start. As Table 39 shows, the responses at the start of the evaluation period were rather evenly spread over the scale, except that virtually no parent was entirely negative.

Table 36

DISTRIBUTION OF VALUES ON
FAMILY STRUCTURE

	Freq.	Percentage of Non-Blanks
Mother and father or other man	838	57.67
Father and mother plus adult relative	125	8.60
Mother plus adult relative(s)	111	7.64
Father plus adult relative(s)	4	0.28
Mother only	316	21.75
Father only	2	0.14
Adult relative(s) only	36	2.48
Adult guardians who are not relatives	21	1.45
	N = 1453	

Table 37

DISTRIBUTION OF VALUES ON FAMILY MOBILITY (MOVES IN FIVE YEARS)

Values	Freq.	Percentage of Non-Blanks
19 - 20	4	0.28
17 - 18	4	0.27
15 - 16	6	0.41
13 - 14	10	0.68
11 - 12	13	0.89
9 - 10	39	2.67
7 - 8	62	4.24
5 - 6	121	8.27
3 - 4	218	14.90
1 - 2	401	27.41
0	585	39.99
	N = 1463	

Table 38

DISTRIBUTION OF VALUES ON OTHER CHILDREN PREVIOUSLY IN HEAD START

	Freq.	Percentage of Non-Blanks
Yes, unknown when and where	180	19.27
Yes, both summer and full year	15	1.61
Yes, 2 children or more full year	5	0.54
Yes, 1 child full year	39	4.18
Yes, 2 children summer	8	0.86
Yes, 1 child summer	25	2.68
No	662	70.88
	N = 934	

Table 39

DISTRIBUTION OF VALUES ON EFFECT OF HEAD START ON CHILD (PRE)

Values	Freq.	Percentage of Non-Blanks
7	196	11.24
6	182	10.44
5	190	10.90
4	207	11.88
3	274	15.72
2	351	20.14
1	319	18.30
0	24	1.38
	N = 1743	

2. Expected Positive Influence of Head Start on Parent (Table 40)

Values on this scale, which can range from 0 to 5, represent the number of benefits to herself that the parent stated she expected from her child's participation in Head Start. Examples of possible benefits included "Make new friends," "Start making more trips," "Learn more about raising children," etc.

The parents' responses at the start of the evaluation period were spread over the entire scale, but almost a third of the responding parents (31.51%) indicated no expected benefits to themselves, and over a third (34.25%) expected only one type of benefit. These results suggest that the parents were not particularly sanguine about positive program influences, aside from those that might occur directly to the children.

3. Attitude Toward Sending Other Children to Head Start (Table 41)

Almost all sample parents (92.07%) indicated that they would like to send other children to Head Start in the future, indicating an initially positive attitude toward Head Start.

4. Parent's Educational Aspirations for Child (Table 42)

About half of the parents (49.07%) expressed the hope that their children would at least complete the work for a college degree, and over three-fourths (76.07%) wanted them to receive at least some college experience.

5. Parent's Educational Expectations for Child (Table 43)

Most parents were pessimistic about their children attaining the level of education that they hoped for; fewer than a fourth (22.45%) expected their children to get into college.

6. Parent's Feeling of Value of Education (Table 44)

This variable is based on nine items in the Parent Interview that make value statements concerning the importance of education (e.g., "The only way that

Table 40

DISTRIBUTION OF VALUES ON EXPECTED POSITIVE INFLUENCE OF HEAD START ON PARENT (PRE)

Values	Freq.	Percentage of Non-Blanks
5	10	1.01
4	61	6.18
3	85	8.61
2	182	18.44
1	338	34.25
0	311	31.51
	N = 987	

Table 41

DISTRIBUTION OF VALUES ON PARENT ATTITUDE TOWARD SENDING OTHER CHILDREN TO HEAD START (PRE)

	Freq.	Percentage of Non-Blanks
Yes	1439	92.07
No	124	7.93
	N = 1563	

Table 42

DISTRIBUTION OF VALUES ON PARENT EDUCATIONAL ASPIRATIONS FOR CHILD (PRE)

	Freq.	Percentage of Non-Blanks
9 - Go to graduate school	100	5.81
8 - Finish college	745	43.26
7 - Go to college	465	27.00
6 - Take voca. work after high school	56	3.25
5 - Finish high school	323	18.76
4 - Take voca. work in high school	13	0.75
3 - Attend junior high school	4	0.23
2 - Finish grade school	2	0.12
1 - No stated goal	14	0.81
	N = 1722	

Table 43

DISTRIBUTION OF VALUES ON PARENT EDUCATIONAL EXPECTATIONS FOR CHILD (PRE)

	Freq.	Percentage of Non-Blanks
9 - Go to graduate school	15	0.87
8 - Finish college	180	10.47
7 - Go to college	191	11.11
6 - Take voca. work after high school	72	4.19
5 - Finish high school	1021	59.39
4 - Take voca. work in high school	24	1.40
3 - Attend junior high school	76	4.42
2 - Finish grade school	20	1.16
1 - No stated goal	120	6.98
	N = 1719	

Table 44

DISTRIBUTION OF VALUES ON PARENT FEELING OF VALUE OF EDUCATION (PRE)

Values	Freq.	Percentage of Non-Blanks
Above 89.9	9	0.52
80.0 - 89.9	46	2.66
70.0 - 79.9	160	9.21
60.0 - 69.9	345	19.86
50.0 - 59.9	445	25.62
40.0 - 49.9	282	16.24
30.0 - 39.9	275	15.83
20.0 - 29.9	127	7.31
10.0 - 19.9	44	2.53
0.0 - 9.9	4	0.23
	N = 1737	
	MEAN = 51.4	
	SD = 17.2	

people can raise the way they live is to get a good education"). Scores on the derived scale can range from 0 to 100; a score is computed by (1) adding the total number of the items to which the parent gave positive reactions (i.e., agreed with a favorable statement or disagreed with an unfavorable statement about education), (2) dividing by the number of items responded to in any fashion, and (3) multiplying the quotient by 100 to provide a percentage figure. Thus, a value of 100 means that the parent gave all positive reactions, and a value of 0 means that she gave all negative reactions.

As Table 44 shows, the parents' responses ranged over the entire scale, with the bulk of the responses near the center of the scale; this suggests that, overall, the parents had moderately positive attitudes toward the importance and value of education.

D. SUMMARY

Most of the sample parents had little education background; only about a third of the mothers, and a similar proportion of the fathers on whom data could be collected, had completed high school. A third of the mothers and over four-fifths of the fathers on whom data were available had jobs, but most of the working parents of both sexes were employed at an unskilled or semi-skilled level.

In about three-fifths of the sample families, the adults living with the Head Start child consisted of the mother plus the father or another man. The second most frequent family structure (approximately one-fifth of the total sample) included only one adult, the mother.

The data about prior children in Head Start were missing for over half the total sample; for those parents whose responses were recorded, about a fourth had previously had at least one child in the program.

Almost all sample parents indicated that they would like to send other children to Head Start in the future, indicating an initially positive attitude toward the program. However, they indicated little expectation that they themselves would receive substantial benefit from the program, aside from the possible benefit to their children.

Most parents had high aspirations for their children's educational attainments (half hoped their children would complete college), but little real expectation that they would achieve those goals (fewer than a fourth expected their children even to enter college). The typical parent had moderately positive attitudes about the value and importance of education to success and happiness in life.

CHAPTER V

THE PROGRAMS

This chapter presents data on certain characteristics of the sample Head Start programs in 1967-68. Some of the data were obtained by recording forms filled out by site personnel (e.g., Description of Center and Classroom Composition, Master Data Card, Characteristics of Teaching Staff), and some by actual observations of the classroom activities (OSCI variables). Several variables relate to the teachers' education level and their training and experience for their Head Start assignments. Other variables describe the child-teacher composition of the classes, the frequency and length of meetings, and the degree to which there were changes during the evaluation period in the composition of both staff and children. Still another set of variables relates to the instructional materials and equipment actually observed in use during the classroom sessions. All frequency values shown in the tables in this chapter refer to the number of children in classes having the specified characteristics.

A. CLASS AND SITE CHARACTERISTICS

1. Delegate Agency (Table 45)

Almost four-fifths of the children (78.96%) were in sites whose delegate agencies were Community Action Programs or similar local welfare groups. Of the remaining children, virtually all were in programs whose delegate agencies were local education agencies.

2. Class Meetings Per Week and Hours of Class Per Day (Tables 46 and 47)

Virtually all of the sample children (96.96%) were in classes that met five days a week, and almost two-thirds (64.76%) attended classes that met for three to four hours each day. Another third (34.69%) were in classes that met from five to eight hours a day.

3. Number of Children in Class (Table 48)

Although there was a spread in class size from 10 to 27 children, most of the children (77.65%) attended classes of from 14 to 18 children.

Table 45

DISTRIBUTION OF VALUES ON DELEGATE AGENCY

	Freq.	Percentage of Non-Blanks
CAP's and similar agencies	1557	78.96
Local education agencies	381	19.32
Parochial schools	34	1.72
	N = 1972	

Table 46

DISTRIBUTION OF VALUES ON CLASS MEETINGS PER WEEK

	Freq.	Percentage of Non-Blanks
5 days	1912	96.96
4 days	60	3.04
	N = 1972	

Table 47

DISTRIBUTION OF VALUES ON HOURS OF CLASS PER DAY

	Freq.	Percentage of Non-Blanks
7-8 hours	367	18.61
5-6 hours	317	16.08
3-4 hours	1277	64.76
0-2 hours	11	0.56
	N = 1972	

Table 48

DISTRIBUTION OF VALUES ON
NUMBER OF CHILDREN IN CLASS

Values	Freq.	Percentage of Non-Blanks
27	10	0.46
26	8	0.36
23	19	0.87
22	56	2.55
21	10	0.46
20	196	8.94
19	53	2.42
18	155	7.07
17	222	10.13
16	227	10.36
15	771	35.17
14	327	14.92
13	56	2.55
12	49	2.24
11	13	0.59
10	20	0.91
	N = 2192	

4. Pupil/Teacher Ratio (Table 49)

Values on this scale ranged from 3 to almost 18, with over two-thirds of the children being in classes that had pupil/teacher ratios of from 5/1 to 9/1.

5. Teacher-Class Ethnic Match (Table 50)

About three-fifths of the sample children (60.29%) were in classes whose teacher was of the same ethnic group as the majority of the children. Another 18.66% of the children were in classes whose teacher was of a different ethnic group than the majority of children. The remaining children were in classes where no one ethnic group had a clear majority of children.

6. Head Teacher's Continuity (Table 51)

Over three-fourths of the sample children were in classes which had the same head teacher throughout the evaluation period. However, almost a sixth of the children were in classes with one change of head teacher, and in at least two other classes there were two or more changes.

7. Outdoor Facility: Square Feet Per Child (Table 52)

About three-fourths of the children (74.82%) were in sites that provided, on the average, 45 square feet or more of outdoor play area per child. At the other end of the scale, over a tenth of the children (11.75%) were in sites offering less than 15 square feet of outdoor play area per child. Most of these cases latter were presumably associated with store-front sites having little or no yard space.

B. OBSERVED CLASSROOM USE OF MATERIALS

The variables in this category were all derived from the OSCI observation forms. Each variable indicates the total number of times that the specified type of material was sighted in actual classroom use, divided by the number of observation periods in which it could have been sighted, and then multiplied by 100 to convert it to a percentage.

Table 49

DISTRIBUTION OF VALUES ON PUPIL/TEACHER RATIO

Values	Freq.	Percentage of Non-Blanks
17.0 - 17.9	11	0.64
16.0 - 16.9	13	0.76
15.0 - 15.9	58	3.38
14.0 - 14.9	52	3.03
13.0 - 13.9	8	0.47
12.0 - 12.9	8	0.47
11.0 - 11.9	56	3.27
10.0 - 10.9	78	4.55
9.0 - 9.9	128	7.46
8.0 - 8.9	247	14.41
7.0 - 7.9	580	33.82
6.0 - 6.9	74	4.31
5.0 - 5.9	278	16.21
4.0 - 4.9	44	2.57
3.0 - 3.9	80	4.66
	N = 1715	

Table 50

DISTRIBUTION OF VALUES ON TEACHER-CLASS ETHNIC MATCH

	Freq.	Percentage of Non-Blanks
Teacher matches majority	1157	60.29
Class mixed	404	21.05
Teacher and majority not matched	358	18.66
	N = 1919	

Table 51

DISTRIBUTION OF VALUES ON
HEAD TEACHER'S CONTINUITY

	Freq.	Percentage of Non-Blanks
Same teacher	1546	78.40
One change	314	15.92
Two changes	15	0.76
Three or more changes	9	0.46
Class reorganized	88	4.46
	N = 1972	

Table 52

DISTRIBUTION OF VALUES ON OUTDOOR FACILITY: SQUARE FEET PER CHILD

Values	Freq.	Percentage of Non-Blanks
45 or more	1599	74.82
40 - 44	25	1.17
35 - 39	11	0.51
30 - 34	73	3.42
25 - 29	79	3.70
20 - 24	86	4.02
15 - 19	13	0.61
Under 15	251	11.75
	N = 2137	

1. Science Materials (Table 53)

There was very little use of science materials (e.g., magnets, aquaria) in most of the sample classes. Virtually all of the children (96.93%) were in classes where science materials were seen in use less often than one observation period out of twenty-five. Over half of the children (56.93%) were in classes where such materials were, for all practical purposes, never used.

2. Language Materials (Table 54)

Language-oriented materials (e.g., story-book records, books) were somewhat more commonly used than science materials. Almost a fifth of the children (18.51%) were in classes where language materials were being applied during at least a tenth of the observation periods. The median value on the scale corresponds to a level of use of approximately once in every twenty observations.

3. Music Materials (Table 55)

As with science materials, very little use was made of music materials, such as musical instruments. Over half of the children (54.27%) were in classes where essentially no use of such materials was observed.

4. Art Materials (Table 56)

Art materials were relatively often observed in use in the classrooms. About half of the children were in classes where such materials were being used during at least 9% of the observation periods. In a few classes, the observed use was as high as once in every four observation periods.

5. Dramatic Materials (Table 57)

There was also considerable application of materials designed for use in dramatic play-acting and role-playing (e.g., story records, puppets). Almost two-thirds of the children (63.18%) were in classes where such materials were being used during 10% to 20% of the observation periods.

6. Small-Muscle Materials (Table 58)

There was moderate use of materials such as puzzles and string-beads, that were designed to exercise the children's small muscles. The median value on this distribution corresponds to an observed frequency of approximately once in every

Table 53

DISTRIBUTION OF VALUES ON
OSCI: SCIENCE MATERIALS

Values*	Freq.	Percentage of Non-Blanks
10	17	0.78
9	0	0.00
8	0	0.00
7	0	0.00
6	34	1.56
5	16	0.73
4	0	0.00
3	244	11.22
2	259	11.89
1	368	16.89
0	1240	56.93
	N = 2178	

---

*Each value in this table indicates the total number of times that the specified type of material was sighted in actual classroom use, divided by the number of observation periods in which it could have been sighted, and then multiplied by 100 to convert it to a percentage. A score of 5, for example, means that in one observation out of twenty, on the average, the material in question was observed in use.

Table 54

DISTRIBUTION OF VALUES ON
OSCI: LANGUAGE MATERIALS

Values*	Freq.	Percentage of Non-Blanks
22 - 23	16	0.73
20 - 21	14	0.65
18 - 19	0	0.00
16 - 17	40	1.84
14 - 15	90	4.13
12 - 13	84	3.86
10 - 11	159	7.30
8 - 9	207	9.50
6 - 7	348	15.98
4 - 5	386	17.72
2 - 3	437	20.06
0 - 1	397	18.23
	N = 2178	

---

*Each value in this table indicates the total number of times that the specified type of material was sighted in actual classroom use, divided by the number of observation periods in which it could have been sighted, and then multiplied by 100 to convert it to a percentage. A score of 5, for example, means that in one observation out of twenty, on the average, the material in question was observed in use.

Table 55

DISTRIBUTION OF VALUES ON
OSCI: MUSIC MATERIALS

Values*	Freq.	Percentage of Non-Blanks
12	15	0.69
11	0	0.00
10	25	1.15
9	11	0.51
8	22	1.01
7	22	1.01
6	73	3.35
5	144	6.61
4	131	6.01
3	60	2.76
2	190	8.72
1	303	13.91
0	1182	54.27
	N = 2178	

---

*Each value in this table indicates the total number of times that the specified type of material was sighted in actual classroom use, divided by the number of observation periods in which it could have been sighted, and then multiplied by 100 to convert it to a percentage. A score of 5, for example, means that in one observation out of twenty, on the average, the material in question was observed in use.

Table 56

DISTRIBUTION OF VALUES ON
OSCI: ART MATERIALS

Values*	Freq.	Percentage of Non-Blanks
30 - 32	27	1.24
27 - 29	31	1.42
24 - 26	63	2.89
21 - 23	84	3.86
18 - 20	135	6.20
15 - 17	105	4.82
12 - 14	275	12.63
9 - 11	344	15.80
6 - 8	431	19.78
3 - 5	474	21.76
0 - 2	209	9.60
	N = 2178	

---

*Each value in this table indicates the total number of times that the specified type of material was sighted in actual classroom use, divided by the number of observation periods in which it could have been sighted, and then multiplied by 100 to convert it to a percentage. A score of 5, for example, means that in one observation out of twenty, on the average, the material in question was observed in use.

Table 57

DISTRIBUTION OF VALUES ON
OSCI: DRAMATIC MATERIALS

Values*	Freq.	Percentage of Non-Blanks
30 - 32	27	1.24
27 - 29	31	1.42
24 - 26	94	4.32
21 - 23	148	6.80
18 - 20	305	14.00
15 - 17	325	14.92
12 - 14	375	17.22
9 - 11	371	17.03
6 - 8	270	12.40
3 - 5	183	8.40
0 - 2	49	2.25
	N = 2178	

---

*Each value in this table indicates the total number of times that the specified type of material was sighted in actual classroom use, divided by the number of observation periods in which it could have been sighted, and then multiplied by 100 to convert it to a percentage. A score of 5, for example, means that in one observation out of twenty, on the average, the material in question was observed in use.

Table 58

DISTRIBUTION OF VALUES ON OSCI: SMALL-MUSCLE MATERIALS

Values*	Freq.	Percentage of Non-Blanks
22 - 23	111	5.10
20 - 21	56	2.57
18 - 19	86	3.95
16 - 17	194	8.91
14 - 15	191	8.77
12 - 13	248	11.38
10 - 11	291	13.36
8 - 9	329	15.10
6 - 7	160	7.35
4 - 5	167	7.67
2 - 3	152	6.98
0 - 1	193	8.86
	N = 2178	

---

*Each value in this table indicates the total number of times that the specified type of material was sighted in actual classroom use, divided by the number of observation periods in which it could have been sighted, and then multiplied by 100 to convert it to a percentage. A score of 5, for example, means that in one observation out of twenty, on the average, the material in question was observed in use.

ten observation periods. The range is from essentially no application of the small-muscle materials to a frequency of once in every four observation periods.

7. Large-Muscle Materials (Table 59)

Materials designed to exercise children's large muscles (e.g., swings, balls) were observed in use fairly often, with values ranging up to one observed use in every three observation periods. The median value on this distribution corresponds to a frequency of about once in every ten observation periods.

C. OBSERVED CLASSROOM ACTIVITIES

The four OSCI factor scores used in the correlational analysis would not be useful for describing the relative frequency of different classroom activities, since those factors were all defined in such a manner that the mean value was approximately 100. However, an earlier research report (Datta, 1970) summarized findings on some of the raw data from the OSCI for 1967-68; with the author's permission, sections of those findings are presented below:

- Caretaking was a low frequency activity, with less than 5% of the activities falling into categories such as arriving, clean-up, or toileting. Primarily undifferentiated activity such as fighting occurred in less than 7% of the scans.

- Many activities occurred with moderate frequency and showed considerable variation. For example, the modal time spent in dramatic role playing was 15-20% (20% of the classes); however, 6% of the classes had virtually no incidents of dramatic role-playing while another 7% had dramatic play observed between 35-40% of the time.

Table 59

DISTRIBUTION OF VALUES ON
OSCI: LARGE-MUSCLE MATERIALS

Values*	Freq.	Percentage of Non-Blanks
33 - 35	15	0.69
30 - 32	10	0.46
27 - 29	31	1.42
24 - 26	0	0.00
21 - 23	126	5.79
18 - 20	241	11.07
15 - 17	254	11.66
12 - 14	237	10.88
9 - 11	314	14.42
6 - 8	283	12.99
3 - 5	323	14.83
0 - 2	344	15.79
	N = 2178	

---

*Each value in this table indicates the total number of times that the specified type of material was sighted in actual classroom use, divided by the number of observation periods in which it could have been sighted, and then multiplied by 100 to convert it to a percentage. A score of 5, for example, means that in one observation out of twenty, on the average, the material in question was observed in use.

- Very few classes were observed to spend more than 5% of the time in specific training for auditory discrimination, quantitative development, and scientific activities; however, as many as 20% of the classes would form a cluster in which these directed kinds of training were of relatively high frequency. Visual perception, on the other hand, varied from less than 5% of the activities (3% of the classes) to 30-40% of the activities (4% of the classes).

- The most widely dispersed activities were motor, rote, informal verbal development, and social interactions. The amount of language training in the formal sense varied from less than 5% of the activities to between 25 and 35% of the activities (6% of the sample), with the mode at between 10 and 15% of the activities. Informal language development was an almost rectilinear distribution ranging from 5% to 75%; some Head Start sample classes apparently had teachers who used virtually every opportunity to facilitate language development, while other teachers made virtually no attempt to use the opportunities in this way.

- Emphasis on good conduct (rules and regulations) varied from little or none (12% of the classes) to as many as 30% of the incidents (9% of the classes), in a positively skewed distribution. In no class was the locus of control always observed to be the child; this distribution was symmetric and bell-shaped, with the median at 50% of the incidents being teacher controlled. Some classes would appear to be substantially teacher controlled, while others could be meaningfully classified as very low on teacher control.

- Group size is still another variable of potential educational significance. The number of activities tallied as "whole group" varied from less than 5% (in three classes) to between 65% and 70% (in two classes); the distribution on this code is flat and somewhat positively skewed.

D. TEACHERS' EDUCATION AND EXPERIENCE

1. Education (Table 60)

These values were obtained for the teacher in each classroom with the greatest number of years of education, usually the head teacher. Most of these teachers were quite well educated, as indicated by the fact that 87% of the sample children had teachers with additional education beyond high school, and over 38% had teachers who had gone to graduate school.

2. Experience with Disadvantaged Children (Table 61)

This table indicates the total length of experience that the teachers had had with disadvantaged children. The figures were calculated by adding the length of Head Start teaching experience, the length of experience with other disadvantaged preschool children, and experience with older disadvantaged children. Figures shown in the left-hand column of the table are roughly equivalent to the total number of months of experience (e.g., "1 to 3 years" is given a value of 24).

There was wide variation in the amount of prior teaching experience, with values ranging from 9 months to 135 months. Almost two-fifths of the children (38.8%) had teachers with from three-and-a-half to six years of experience with disadvantaged children. On the average, the teachers in 1967-68 were quite experienced.

E. SUMMARY

Over three-fourths of the children (78.96%) were in sites whose delegate agencies were Community Action Programs or similar local welfare groups. Virtually all of the classes met five days a week, and most met for three to four hours each day. Class size varied somewhat, but over three-fourths of the children were in classes of from 14 to 18 children. Pupil/teacher ratio ranged from 3 to almost

Table 60

DISTRIBUTION OF VALUES ON TEACHER'S EDUCATION

Values	Freq.	Percentage of Non-Blanks
17 years or more	663	38.04
15 - 16 years	592	33.96
13 - 14 years	266	15.26
11 - 12 years	162	9.30
Less than 11 years	60	3.44
	N = 1743	

Table 61

DISTRIBUTION OF VALUES ON TEACHER'S EXPERIENCE WITH DISADVANTAGED CHILDREN

Values*	Freq.	Percentage of Non-Blanks
130 - 139	66	3.79
120 - 129	11	.63
110 - 119	64	3.67
100 - 109	73	4.19
90 - 99	140	8.03
80 - 89	59	3.38
70 - 79	405	23.24
60 - 69	77	4.42
50 - 59	197	11.30
40 - 49	249	14.29
30 - 39	98	5.62
20 - 29	133	7.63
10 - 19	60	3.44
0 - 9	111	6.37
	N = 1743	

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*Each value in this table is roughly equivalent to the total number of months of teaching experience with disadvantaged children; for example, a response of "1 to 3 years" is given a value of 24.

18, with the most typical values being from 5/1 to 9/1. Most children had the same head teacher over the entire evaluation period, but in about a sixth of the classes there was at least one change of head teacher.

The typical class had at least one teacher who was quite highly educated. Almost nine-tenths of the sample children had a teacher with additional education beyond high school, and over a third had teachers who had gone to graduate school.

Most teachers were also quite experienced; almost two-fifths of the children had teachers with from three-and-a-half to six years of experience with disadvantaged children. (This figure includes experience with Head Start, with other preschool children, and with older disadvantaged children.) There was wide variation in amount of prior experience, with values ranging from 9 months to 135 months.

There was considerable variability among classes in the relative frequency of use of different types of classroom materials, as recorded on the OSCI by independent observers. Overall, the most commonly applied types of materials were art materials and materials for use in dramatic role-playing and play-acting (e.g., puppets, story records). There was also fairly frequent use of materials designed to exercise the children's large muscles (e.g., swings, balls), and small muscles (e.g., puzzles, string-beads). Language-oriented materials (e.g., story-book records, books) were less often used, and there was very little use of science materials (e.g., magnets, aquaria) or music materials (e.g., musical instruments).

Data from an earlier study of the 1967-68 OSCI records indicate that caretaking (e.g., clean-up, toileting) and fighting were infrequent, as were activities providing specific training for auditory discrimination, quantitative development, and scientific activities. More frequently observed activities included dramatic role-playing and informal language development.

CHAPTER VI

GAINS ASSOCIATED WITH HEAD START

This chapter addresses the question of whether there were significant changes in the Head Start children's performance, and in their parents' attitudes, that can be associated with the children's participation in Head Start.

Mean scores were calculated for the pretest and posttest administrations of each major dependent variable; mean gain scores were then computed, and the significance level of each gain was determined by the use of a two-tailed t-test.[1] Appendix A contains tables showing the frequency distributions for the pretest scores, the posttest scores, and the gain scores on each dependent variable. Sample sizes in these tables differ from those given for the pretest scores in Chapters III and IV, because the tables in Appendix A are based on only those children and parents for whom there were both pretest and posttest scores.

The following section discusses the results of comparisons between the pretest means and the posttest means.

A. PRETEST-POSTTEST PERFORMANCE CHANGES

Table 62 summarizes all findings on the comparisons of pretest and posttest performance. The column at the far left lists the child and parent dependent variables. Other columns, from left to right, show the sample sizes; the means of the pretest scores (for persons with both pretest and posttest data); the means of the posttest scores; the mean gain scores; and the t-ratios of the gain scores. A double asterisk (**) after a t-ratio indicates that the gain (or loss) was significant at the .01 level.

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[1] For several of the dependent variables (Factors Affecting Test Performance, SIOP scales, Educational Aspirations for Child), the frequency distributions, as shown in Appendix A, were skewed. However, in each case the pretest and posttest distributions were skewed in the same direction, so that the t-test was regarded as yielding useful results.

Table 62

PRETEST-POSTTEST PERFORMANCE CHANGES

Dependent Variable	N	Pretest Mean	Posttest Mean	Mean Change	t
Stanford-Binet	1508	91.50	96.08	4.58	18.16**
Factors Affecting Test Performance	1474	56.84	60.15	3.31	10.53**
SIOP: Total Verbal Behavior	1507	39.53	44.29	4.76	6.91**
SIOP: Total Non-Verbal Behavior	1505	12.94	13.09	0.15	0.38
SIOP: Total Inappropriate Behavior	1032	1.28	1.33	0.05	0.31
SIOP: Initiations by Subject to Peers of Same Ethnic Group	1281	12.94	13.43	0.49	1.86
SIOP: Initiations by Subject to Peers of Other Ethnic Group	1177	3.99	4.69	0.70	4.59**
Perceived Effect of Head Start on Child	1388	3.46	3.68	0.22	4.22**
Educational Aspirations for Child	1385	7.04	6.99	-0.05	-1.39
Educational Expectations for Child	1383	5.21	5.07	-0.14	-2.81**
Value of Education	1401	51.24	51.86	0.62	1.36

**Difference significant at .01 level

1. Cognitive Measure

As Table 62 indicates, the sample children showed a significant gain (.01 level) on the Stanford-Binet. Scores rose from 91.49 to 96.08, for a mean improvement of 4.58 IQ points. This is very similar to the gain for 1968-69, and is comparable to results from several earlier studies of preschool programs.

2. Social-Emotional Measures

Stanford-Binet examiners observed a significant (.01 level) improvement in the children's adaptiveness to the test conditions, as recorded in the Inventory of Factors Affecting Test Performance. At posttest time, the children showed less evidence of being distracted by the examiner, by noises or other environmental circumstances, and by the test itself, than they showed on the pretest. This finding parallels the results on the measure for 1968-69, though the absolute magnitude of the mean gain was larger in 1968-69 (6.86 in 1968-69 compared with 3.31 in 1967-68).

There were also significant pre-post gains (.01 level) in the frequency of the children's verbal interactions with peers and adults, and in their initiations of social interactions with children of other ethnic groups. The findings suggest that, during their Head Start experiences, the children became more verbally oriented and took more social initiative, particularly in interacting with other ethnic groups. These would appear to be important benefits associated with Head Start exposure, although direct causality cannot be proven.

3. Parent Attitudes

There was a significant increase (.01 level) in the number of benefits that parents felt their children were deriving from Head Start. At the same time, however, there was a significant decrease (.01 level) in the parents' educational expectations for their children. Since there was a smaller (and non-significant) decrease in the parents' aspirations for their children, the net effect was to increase the disparity between what the parents hoped for, and what they felt was possible for their children.

B. EFFECTS OF MISSING DATA

As noted in Chapter I, the extensive amount of missing data for some variables could bias the results of this study, if the missing cases were drastically different than the children represented in the statistical analyses. Some insight concerning one potential source of bias can be gained by comparing the pretest performance of all children having pretest scores (see Tables 1 through 16), vs. the pretest performance of only those children with both pretest and posttest scores (Table 62).

On the Stanford-Binet, the mean pretest IQ for the full pretest group (N = 1824) was 91.42; the corresponding pretest mean for the pretest-posttest overlap group (N = 1508) was 91.50. Thus, on this key variable, it does not appear that the children who dropped out of the programs before the end of the evaluation period were appreciably different than those who stayed with the programs. Similarly, on the Inventory of Factors Affecting Test Performance, the mean pretest scores for the full pretest group (N = 1792) and for the pretest-posttest overlap group (N = 1474) were 56.72 and 56.84, respectively. This finding suggests that the children who dropped out of the programs before the end of the evaluation period may have had a slightly lower entry level on this measure than those who remained with the program; the difference is fairly small, however, compared with the overall pre-post gain on the Inventory of Factors Affecting Test Performance, which was 3.31. On most other performance measures there were even smaller differences in pretest scores between the full pretest group and the pretest-posttest overlap group. In summary, it does not appear that the particular type of missing data considered here, at least, were likely to be an important source of bias in the analysis reported in this document.

C. SUMMARY

The gain on the Stanford-Binet was almost exactly the same as in 1968-69. Though relatively small in magnitude, the gain was statistically significant, and showed that the Head Start children were experiencing growth in the cognitive domain.

The results in the social-emotional domain were quite positive. Children improved in adaptiveness to the Stanford-Binet test conditions; in frequency of verbal activity; and in taking the initiative in social interactions with children of other ethnic groups. These findings indicate valuable progress toward socially oriented program goals.

There was a significant improvement in the parents' attitudes regarding the perceived benefits of Head Start for their children; at the same time, however, the parents' educational expectations for their children decreased. Overall, there was no consistent pattern of improvement in the parents' feeling of optimism for their children, nor did the parents feel that they personally would derive appreciable benefits from their children's exposure to Head Start.

All of the above findings must be interpreted with caution, because of the lack of non-Head Start control groups. An association has been demonstrated between Head Start participation and gains on a number of important performance measures, but no causal relationship has been proven.

An examination of the frequency distributions of gains, presented in Appendix A, shows that there were sizable variations in the magnitude of the gains on most of the performance measures. On the Stanford-Binet, for example, though the mean gain was 4.58, approximately 14% of the children gained 15 points or better. The following three chapters explore these differences further, to determine whether they can be systematically associated with (1) characteristics of the children themselves, (2) features of the programs that they attended, and/or (3) interactions between the child and program characteristics.

CHAPTER VII

DIFFERENCES IN GAINS FOR DIFFERENT TYPES OF CHILDREN

Chapter VI has shown that there were significant gains over the evaluation period on the Stanford-Binet and on several social-emotional performance measures. But how were these gains distributed over different subgroups of children? The data shown in Tables 63 through 68 provide a basis for answering this question. Each table provides a comparison of gains for two different groups of children. For example, Table 66 compares gains for Urban and Non-Urban children. From left to right, the columns show the dependent variables; the sample sizes, pretest means, posttest means, and mean gains on each dependent variable for one subgroup (i.e., Urban children); the sample sizes, pretest means, posttest means, and mean gains for the second subgroup (Non-Urban children); and the differences in mean gains for the two subgroups. A double asterisk (**) after the difference value means that the difference is significant at the .01 level; a single asterisk designates a .05 level of significance.

A. CHILD'S AGE

Table 63 shows only one measure, the Stanford-Binet, on which there was a significant difference in gains for children below 60 months in age, and children 60 months or older. This difference, which barely reached the .05 level, favored the children under 60 months. In general, as was found in the analysis for 1968-69, age was not an important determiner of the children's progress in Head Start.

B. CHILD'S SEX

For all practical purposes, there were no differences in the performance gains of boys and girls, as shown in Table 64 . Again, this finding agrees with the 1968-69 analysis.

Table 63

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH CHILD'S AGE

DEPENDENT VARIABLE	YOUNG (BELOW 60 MONTHS)				OLD (60 MONTHS AND ABOVE)				DIFF. IN GAIN[1]
	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	
Stanford-Binet	816	93.39	98.50	5.11	692	89.26	93.22	3.96	-1.15*
Factors Affecting Test Performance	786	55.57	59.35	3.78	688	58.28	61.06	2.78	-1.00
SIOP: Total Verbal Behavior	762	38.63	43.04	4.41	658	41.55	46.74	5.19	0.78
SIOP: Total Non-Verbal Behavior	770	12.78	12.59	-0.19	649	13.52	13.80	0.28	0.42
SIOP: Total Inappropriate Behavior	555	1.33	1.30	-0.03	403	1.27	1.42	0.15	0.18
SIOP: Initiations by Subject to Peers of Same Ethnic Group	644	12.76	13.25	0.49	571	13.34	13.83	0.49	0.00
SIOP: Initiations by Subject to Peers of Other Ethnic Group	587	3.37	3.96	0.59	515	4.74	5.48	0.74	0.15

* Difference significant at .05 level

[1] Sign of difference is positive when value for Old children is larger.

Table 64

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH

CHILD'S SEX

DEPENDENT VARIABLE	MALE				FEMALE				DIFF. IN GAIN[1]
	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	
Stanford-Binet	762	91.32	95.79	4.47	746	91.67	96.38	4.71	0.24
Factors Affecting Test Performance	753	57.21	60.21	3.00	721	56.45	60.08	3.63	0.63
SIOP: Total Verbal Behavior	773	40.18	45.68	5.50	733	38.82	42.82	4.00	-1.50
SIOP: Total Non-Verbal Behavior	768	12.70	13.55	0.85	736	13.21	12.61	-0.60	-1.45
SIOP: Total Inappropriate Behavior	536	1.41	1.79	0.38	496	1.14	0.82	-0.32	-0.70*
SIOP: Initiations by Subject to Peers of Same Ethnic Group	659	13.02	13.86	0.84	620	12.86	12.97	0.11	-0.73
SIOP: Initiations by Subject to Peers of Other Ethnic Group	612	4.38	5.12	0.74	562	3.58	4.23	0.65	-0.09

** Difference significant at .01 level

[1] Sign of difference is positive when value for Female children is larger.

C. CHILD'S INITIAL (PRETEST) IQ

As shown in Table 65 , the children's pretest IQ's were significantly related to their gains on the Stanford-Binet and on two social-emotional measures: the Inventory of Factors Affecting Test Performance, and the number of inappropriate social behaviors.

On the Stanford-Binet, the Low initial IQ (below 85) group gained significantly more (.01 level) than the Mid (85-95) IQ group, which in turn gained more (.01 level) than the High (above 95) IQ group. This agrees with the trend found in the 1968-69 data. Also, as in the 1968-69 analysis, the absolute magnitude of the differences is substantial. The Low initial IQ children gained, on the average, over seven IQ points more than the High IQ group.

On the Inventory of Factors Affecting Test Performance, both the Low initial IQ children and the Mid IQ group made significantly larger gains (.01 level and .05 level, respectively) than the High IQ group. On the other hand, the Low initial IQ group also showed an increase in the frequency of inappropriate social behavior, whereas there was a decrease in such behavior in both the Mid and High IQ groups.

The results suggest that, in the cognitive domain, at least, children with lower initial ability benefited more from Head Start than those with higher initial ability. In the social-emotional domain, the results are less clear-cut, with the results on the SIOP:Total Inappropriate Behavior somewhat contradicting those on the Inventory of Factors Affecting Test Performance.

It is possible that the findings may be partially influenced by a regression-toward-the-mean phenomenon. That is, there could have been erroneous placements in the three initial IQ groups, resulting from measurement errors on the Stanford-Binet pretest; the apparently larger gains of the Low initial IQ children could to some degree reflect the fact that certain children, erroneously counted as part of that group, showed their "true" ability on the posttest and thereby pulled up the group's mean gain.

Table 65

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH CHILD'S PRETEST IQ

DEPENDENT VARIABLE	LOW IQ (BELOW 85)				MID IQ (85-95)				HIGH IQ (OVER 95)						
	N	PRE MEAN	POST MEAN	MEAN GAIN	N	PRE MEAN	POST MEAN	MEAN GAIN	N	PPE MEAN	POST MEAN	MEAN GAIN	DIFF.IN GAIN LOW-MID IQ	DIFF.IN GAIN LOW-HIGH IQ	DIFF.IN GAIN MID-HIGH IQ
Stanford-Binet	393	74.96	83.63	8.67	502	89.16	94.61	5.45	613	104.01	105.26	1.25	3.22**	7.42**	4.20**
Factors Affecting Test Performance	386	51.77	56.98	5.21	477	56.60	60.08	3.48	587	60.87	62.64	1.77	1.73	3.44**	1.71
SIOP: Total Verbal Behavior	370	34.97	39.49	4.52	461	39.57	43.85	4.28	586	43.93	49.12	5.19	0.24	-0.67	-0.91
SIOP: Total Non-Verbal Behavior	374	15.39	13.71	-1.68	459	13.05	13.20	0.15	578	12.00	12.25	0.25	-1.83	-1.93	-0.10
SIOP: Total Inappropriate Behavior	274	1.04	1.77	0.73	315	1.51	1.27	-0.24	368	1.45	1.20	-0.25	0.97*	0.98*	0.01
SIOP: Initiations by Subject to Peers of Same Ethnic Group	327	11.87	12.75	0.88	398	13.67	13.25	-0.42	489	13.51	14.12	0.61	1.30	0.27	-1.03
SIOP: Initiations by Subject to Peers of Other Ethnic Group	301	3.58	4.13	0.55	363	4.22	4.52	0.30	437	4.20	5.20	1.00	0.25	-0.45	-0.70

** Difference significant at .01 level

* Difference significant at .05 level

In the 1968-69 analysis, the regression-toward-the-mean explanation was largely rejected on the basis that there was a consistent pattern across a wide variety of measures, all showing the trend toward greater gains for the Low IQ group. This pattern is not so extensive or consistent in the 1967-68 data; thus it is difficult to discount the regression rationale completely.

D. URBAN/NON-URBAN RESIDENCE

Table 66 shows significant differences (.01 level) in the gains of Urban and Non-Urban children on only two variables, both from the SIOP: Initiations by Subject to Peers of Same Ethnic Group, and Initiations by Subject to Peers of Other Ethnic Group. In both cases, the Non-Urban children made the larger gains. These results cannot be entirely explained on the basis of regression toward the mean, since on one measure (Initiations by Subject to Peers of Other Ethnic Group), the Non-Urban group started at a higher level, yet made higher gains.

The results for 1967-68 differ somewhat from those for 1968-69, when the Non-Urban children made significantly larger gains than the Urban children on eight different measures, including the Stanford-Binet. This difference in findings for the two years may result from the fact that in 1967-68 there were relatively small differences in pretest scores on most measures for Urban and Non-Urban children, whereas in 1968-69 the Non-Urban children had substantially lower prescores than Urban children on several measures. Thus, the greater gains for the Non-Urban children (relative to Urban children) in 1968-69 may have been associated more with that group's initially low performance than with urbanicity per se.

E. SOUTH/NON-SOUTH RESIDENCE

As Table 67 shows, Non-Southern children made significantly larger gains than Southern children on four variables, including both cognitive and social-emotional measures. The Non-Southern children improved by a larger amount on the Stanford-Binet (.05 level), the frequency of non-verbal social behavior (.01 level), and the number of initiations of social interactions

Table 66

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN				NON-URBAN				DIFF. IN GAIN[1]
	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	
Stanford-Binet	675	91.79	96.18	4.39	824	91.22	95.99	4.77	0.38
Factors Affecting Test Performance	647	56.22	59.32	3.10	818	57.26	60.78	3.52	0.42
SIOP: Total Verbal Behavior	647	39.64	42.98	3.34	855	39.44	45.34	5.90	1.56
SIOP: Total Non-Verbal Behavior	659	12.77	12.22	-0.55	841	13.10	13.78	0.68	1.23
SIOP: Total Inappropriate Behavior	515	1.18	1.07	-0.11	514	1.37	1.56	0.19	0.30
SIOP: Initiations by Subject to Peers of Same Ethnic Group	528	13.47	12.57	-0.90	748	12.56	14.01	1.45	2.35**
SIOP: Initiations by Subject to Peers of Other Ethnic Group	505	2.83	2.93	0.10	666	4.86	6.04	1.18	1.08**

** Difference significant at .01 level

[1] Sign of difference is positive when value for Non-Urban group is larger.

Table 67

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH
SOUTH/NON-SOUTH RESIDENCE

DEPENDENT VARIABLE	SOUTH				NON-SOUTH				DIFF. IN GAIN[1]
	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	
Stanford-Binet	461	90.30	94.07	3.77	1047	92.02	96.97	4.95	1.18*
Factors Affecting Test Performance	455	58.57	61.38	2.81	1019	56.06	59.60	3.54	0.73
SIOP: Total Verbal Behavior	430	42.96	47.18	4.22	1076	38.14	43.14	5.00	0.78
SIOP: Total Non-Verbal Behavior	421	17.40	15.71	-1.69	1083	11.21	12.08	0.37	2.56**
SIOP: Total Inappropriate Behavior	319	1.82	1.81	-0.01	713	1.04	1.11	0.07	0.08
SIOP: Initiations by Subject to Peers of Same Ethnic Group	403	13.85	12.54	-1.31	876	12.52	13.83	1.31	2.62**
SIOP: Initiations by Subject to Peers of Other Ethnic Group	396	4.84	5.12	0.28	778	3.56	4.48	0.92	0.64*

** Difference significant at .01 level

* Difference significant at .05 level

[1] Sign of difference is positive when value for Non-South children is larger.

with other children of both the same ethnicity (.01 level) and of other ethnic groups (.05 level).

The finding on the Stanford-Binet is one of particular interest because the Non-Southern children, who had higher initial scores, also made the larger gains; this is an exception to the general rule noted earlier.

F. STANFORD-BINET PRETEST WEEKS

Although the interval between pretest and posttest was relatively constant, there were substantial variations in the number of weeks between enrollment and pretest. To study the relationship between pretest weeks and pretest-posttest performance gains, separate analyses were performed for three groups of children: a Low Weeks group whose interval between enrollment and Stanford-Binet pretest was one to two weeks; a Mid Weeks group whose interval was three to six weeks; and a High Weeks group whose interval was over six weeks.[1] The results of the analyses are shown in Table 68.

Although there are significant differences in gains for the Low Weeks, Mid Weeks, and High Weeks groups on several measures, no systematic pattern is apparent in the direction of the differences. For example, children who received their pretest more quickly did not consistently make larger gains across the different measures. This finding may be related to the fact that there also was no systematic pattern in the direction of differences in the pretest scores.

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[1] The pretest interval for the Inventory of Factors Affecting Test Performance was the same as that for the Stanford-Binet. Other social-emotional measures were administered at somewhat different times than the Stanford-Binet, but probably did not differ appreciably from the Stanford-Binet in terms of the order or sequence in which they were administered by the different Head Start Centers.

Table 68

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH STANFORD-BINET PRETEST WEEKS

	LOW WEEKS (1-2 WEEKS)				MID WEEKS (3-6 WEEKS)				HIGH WEEKS (OVER 6 WEEKS)						
DEPENDENT VARIABLE	N	PRE MEAN	POST MEAN	MEAN GAIN	N	PRE MEAN	POST MEAN	MEAN GAIN	N	PRE MEAN	POST MEAN	MEAN GAIN	DIFF.IN GAIN LOW-MID WEEKS	DIFF.IN GAIN LOW-HIGH WEEKS	DIFF.IN GAIN MID-HIGH WEEKS
Stanford-Binet	118	90.66	94.84	4.18	754	91.65	96.67	5.02	635	91.47	95.61	4.14	-0.84	0.04	0.88
Factors Affecting Test Performance	116	60.18	61.77	1.59	734	55.78	60.19	4.41	603	57.99	60.12	2.13	-2.82*	-0.54	2.28**
SIOP: Total Verbal Behavior	112	37.96	44.15	6.19	699	39.28	45.05	5.77	609	41.63	44.77	3.14	0.42	3.05	2.63
SIOP: Total Non-Verbal Behavior	113	15.73	10.08	-5.65	687	12.43	12.04	-0.39	615	13.63	14.42	0.79	-5.26**	-6.44**	-1.18
SIOP: Total Inappropriate Behavior	81	2.02	0.36	-1.66	373	1.20	1.55	0.35	506	1.35	1.42	0.07	-2.01**	-1.73**	0.28
SIOP: Initiations by Subject to Peers of Same Ethnic Group	103	14.99	14.73	-0.26	602	11.65	13.06	1.41	511	14.44	13.67	-0.77	-1.67	0.51	2.18**
SIOP: Initiations by Subject to Peers of Other Ethnic Group	87	2.16	2.06	-0.10	543	5.30	6.70	1.40	472	2.93	2.83	-0.10	-1.50*	0.00	1.50**

** Difference significant at .01 level

* Difference significant at .05 level

G. SUMMARY

Several of the subgrouping variables, notably the children's initial Stanford-Binet IQ level, were significantly related to the amount of performance gain. Many of these relationships appear to fall into a single pattern: namely, that children with the lowest initial scores on a measure tended to make the highest gain scores on that measure. This trend is consistent with the findings for the 1968-69 data.

On performance measures where there were consistent differences in gains, the larger gains were usually made by Non-Southern children and by children who had low initial IQ scores. Age and sex showed little association with magnitude of gains.

CHAPTER VIII

DIFFERENCES IN GAINS ASSOCIATED WITH DIFFERENT PROGRAM APPROACHES

Were some program approaches associated with greater child and parent gains than other approaches? To answer this question, a series of one-way analyses of variance were performed; each set of analyses examined the relationship between a selected program variable (e.g., level of classroom use of language materials) and each of the selected dependent variables. The unit for these analyses was the individual child, rather than the class or site. The analysis-of-variance model used was one in which unequal cells were unweighted.

The program variables used in the analyses of variance were those described in Chapter II; that is, they included only the smaller subset of variables selected because they showed strong relationships with the dependent variables in the screening test (correlational analysis), because they seemed of special theoretical or practical importance, or because similar variables had shown significant relationships in the 1968-69 analyses. The selected program variables included the degree of teacher continuity within each classroom; the tacher's level of general education; her prior experience with disadvantaged children; the degree of class transiency; the pupil/teacher ratio; and the amount of observed classroom use of small-muscle materials, large-muscle materials, language materials, and dramatic materials.

The dependent variables used in the analyses of variance differed from one program variable to another, as shown in Tables 69 through 77. In the analyses for a particular program variable, every dependent variable found in the correlational analysis to be strongly related was automatically included. Other dependent variables, particularly the Stanford-Binet and the Inventory of Factors Affecting Test Performance, were sometimes included when it was felt that a null-finding (i.e., failure to find a significant relationship between the dependent variable and the program variable) might be surprising, and thus represent a finding of interest. An example is the inclusion of the Stanford-Binet in the analyses for Teacher's Experience with Disadvantaged Children, even though the correlational analyses showed no significant relationships between those two variables.

Before the analyses of variance were performed, adjusted posttest scores were calculated for all the performance measures to be used in the analyses. This procedure was identical to that described in the report on the analysis of the 1968-69 data (TM-4862/000). The posttest scores were adjusted by regression techniques to correct for pretest differences among the children; the adjusted posttest scores were then used in place of simple gain scores as the dependent variables in the analyses of variance.

The adjustment technique applied a straightforward, one-variable regression analysis in which the pretest score was used to "predict" the posttest score. The difference between the observed and predicted posttest scores was calculated, and this "residual" was the basic measure of performance used in the analyses. In order to make the values more easily understood, the pretest group mean was added to each residual. This transformation had no effect on the variance of these scores, since it was a constant for all children.

Instead of estimating the regression line for this adjustment using all of the data available for each performance measure, the adjustment was based exclusively on the data from one of the "levels" (the lowest) on the program variable being studied. The reason for this procedure was that the use of all the data might have obscured the actual effect of the program variable, because of the fact that groups receiving more of the "treatment" would have been pooled (for adjustment purposes) with groups receiving less of the treatment. As is often the case, the decision involved a statistical trade-off. By using an adjustment procedure more sensitive to program effects, the possibility of "false positives" was also increased. This seems an acceptable risk, however, in a study which is somewhat exploratory in nature. Furthermore, in the later presentation of results of the analyses of variance, two levels of probability (.05 and .01) have been distinguished, so that the .01 level can be used by readers who prefer a more stringent interpretation of significance.

A. RESULTS OF ANALYSES OF VARIANCE

Tables 69 through 77 show the results of the analyses of variance for the different program variables. These were one-way analyses, with unequal cells unweighted. The columns in each table contain, from left to right, the names of the dependent variables; the means and standard deviations on each dependent variable of the children in the lowest level of the program variable (e.g., children in classes whose teachers had a low educational level); the means and standard deviations for children in successively higher levels of the program variable; the total number of degrees of freedom in the analysis of variance; and the resulting F-ratio. F-ratios are marked with a double asterisk if they are significant at the .01 level, and a single asterisk if they reach the .05 level of significance.

1. Class Transiency

Some classes had fairly stable compositions, with most of the children who started the evaluation period still being with the same classes at the end of that period. In other classes there was a high transiency rate. Logic suggests that Head Start children would make larger gains in the more stable classes, and the results of the correlational analysis also indicate a relationship between transiency and performance.

To explore this relationship in greater depth, two groups of children were defined. The High Transiency group consists of children in classes where between 0% and 74% of the children in those classes at posttest time were the same as those in the classes at pretest time. The Low Transiency group consists of children with 75% to 100% overlap in pretest-posttest composition. It should be noted that both groups are restricted to children who themselves were in the classes over the full evaluation period; all of the analyses of gains for both groups were based exclusively on children for whom there pretest and posttest data.

Table 69 shows that Class Transiency was significantly related to six performance variables. On three variables the Low Transiency group made significantly larger gains, and on the other three variables the High Transiency group gained more.

Table 69

RESULTS OF ANALYSES OF VARIANCE ON

CLASS TRANSIENCY

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	97.14	8.77	94.85	9.93	1441	19.60**
Factors Affecting Test Perform.	60.05	9.02	61.30	7.90	1402	6.48*
SIOP: Total Verbal Behavior	44.63	22.77	42.28	21.20	1445	3.41
SIOP: Initiations by Subject to Peers of Same Ethnic Group	13.70	7.87	12.72	7.12	1227	4.27*
SIOP: Initiations by Subject to Peers of Other Ethnic Group	5.04	5.10	4.01	4.69	1132	10.13**
Perceived Effect of Head Start on Child	3.55	1.72	3.92	1.82	1330	12.34**
Educational Aspirations for Child	6.85	1.24	7.13	1.24	1333	14.11**

M_1 = Mean for low transiency

M_2 = Mean for high transiency

**F significant at .01 level

*F significant at .05 level

The superiority of the Low Transiency group on the Stanford-Binet seems quite logical. Cognitively oriented instruction could presumably proceed in a more orderly and consistent fashion in classes of stable composition, than in classes where children were frequently leaving or new children arriving. It is also not difficult to understand why the Low Transiency group made larger gains in number of initiations of social interactions with peers of the same ethnic group and of other ethnic groups. In a classroom of stable composition, the children would have a longer sustained period in which to get to know each other, to become friends, and to interact socially.

Another finding that appears logical upon careful consideration is the superior gain of the High Transiency group on the Inventory of Factors Affecting Test Performance. That measure reflects the child's ability to adapt to a fairly novel situation involving the Stanford-Binet examiner and the instrument itself. In a class with a high transiency rate, the child would become more accustomed to seeing new faces, and thus might become less intimidated by the Stanford-Binet examiner.

What is more difficult to explain is the fact that the parents of children in the High Transiency group perceived greater gains for their children in Head Start, and had higher aspirations for their children's educational futures. One possible explanation of the finding on the parents' perception of Head Start benefits is related to the specific questions asked in the Parent Interview. That instrument asks whether the parent feels her child speaks better, is more self-confident, gets along better with older children, is better able to do things on his own, and is interested in new things. Like the Inventory of Factors Affecting Test Performance, these questions seem to be addressed largely to the child's adaptiveness to new people and situations; such adaptiveness might be enhanced by greater mobility of other children into and out of the classroom.

2. Teacher Continuity

Head Start classes varied in staff stability as well as in transiency rate among children. To explore the possible relationship of this variable with performance, children were divided into a High Teacher Continuity group and a Low Teacher Continuity group. The High Teacher Continuity group consists of children who had the same head teacher over the entire evaluation period; the Low Teacher Continuity group consists of children whose head teacher changed at least once during that period.

The correlational analysis had shown the Teacher Continuity variable to be significantly associated with both the Stanford-Binet and the Inventory of Factors Affecting Test Performance. In the analyses of variance, by contrast, only the Inventory of Factors Affecting Test Performance was found significantly related (although there was a suggestive difference of one IQ point on the Stanford-Binet, in favor of the High Teacher Continuity group). As Table 70 shows, in classes whose head teacher did not change, the children made significantly greater gains (.01 level) on the Inventory of Factors Affecting Test Performance. This finding appears in one sense to contradict an explanation presented earlier for the Class Transiency variable, to the effect that a large amount of transiency and mobility within a classroom enhances the children's adaptiveness to the Stanford-Binet test situation. Perhaps the changes in head teacher were perceived by children in the Low Teacher Continuity group as more unsettling and anxiety-producing than changes among the children's peers.

3. Pupil/Teacher Ratio

Did children make larger gains in classes with fewer children per teacher? Comparisons were made on several performance variables for two groups of children; one group consisted of children in classes with up to 7.5 children per teacher, and the other group included all children in classes with more than 7.5 children per teacher.

As Table 71 shows, pupil/teacher ratio was not significantly related to gains on the Stanford-Binet, but was related to performance on two social-emotional measures. Children in classes with fewer than 7.5 children per teacher made significantly larger gains (.01 level) on the Inventory of Factors Affecting Test Performance, and in their number of initiations of social interactions with peers of the same ethnic group. A possible explanation is that, in these classes with

Table 70

RESULTS OF ANALYSES OF VARIANCE ON

TEACHER CONTINUITY

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	95.87	8.86	96.84	9.30	1441	2.22
Factors Affecting Test Performance	58.27	9.52	60.06	8.57	1404	7.75**

M_1 = Mean for low level of continuity **F significant at .01 level

M_2 = Mean for high level of continuity

Table 71

RESULTS OF ANALYSES OF VARIANCE ON

PUPIL/TEACHER RATIO

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	97.51	8.97	97.03	8.48	1137	0.77
Factors Affecting Test Performance	60.37	8.44	58.49	9.79	1102	11.26**
SIOP: Total Verbal Behavior	43.47	21.43	45.60	24.28	1124	2.35
SIOP: Initiations by Subject to Peers of Same Ethnic Group	13.83	7.76	12.32	7.99	947	8.11**
SIOP: Initiations by Subject to Peers of Other Ethnic Group	4.49	4.99	4.22	4.14	849	0.65

M_1 = Mean for low pupil/teacher ratio

M_2 = Mean for high pupil/teacher ratio

**F significant at .01 level

lower pupil/teacher ratios, the teachers were able to work more with small groups of children, and to direct those children into activities that maximized inter-personal relationships. Such small-group activities might have increased the children's level of social initiative and enabled them to adapt more readily to new social situations.

4. Teacher's Education

To study the relationship between children's performance and teachers' level of education, two groups of children were defined: the High Teacher Education group includes children whose most highly educated teacher had 15 to 16 years of education (most had a college degree), and the Low Teacher Education group consists of children whose most highly educated teacher had less than 15 years of education. The results are shown in Table 72.

On the Stanford-Binet and on three social-emotional measures, children in the Low Teacher Education group made significantly larger gains. This finding is consistent with results reported earlier for the 1968-69 data (TM-4862/000). One possible explanation for this finding is that, in some way, the more highly educated teachers had acquired teaching habits or speech patterns that made it difficult for them to communicate effectively with young disadvantaged children. This possibility is discussed at some length in the report for 1968-69. There are alternative explanations, however, related to the possibility that the apparent effects of teacher education are actually artifacts of other differences in the teachers, in the composition of the classes, in the resources available to the teachers, etc. It is not feasible to test all of these alternative exaplanations, but in Chapter IX, an attempt is made to separate out two possible sources of variance that might have been confounded with the Teacher Education variable; these are the children's initial IQ level, and their geographic area of residence (South/Non-South).

5. Teacher's Experience with Disadvantaged Children

In the 1968-69 analyses, a negative relationship was found between the children's performance and the teachers' length of paid experience with disadvantaged

Table 72

RESULTS OF ANALYSES OF VARIANCE ON TEACHER'S EDUCATION

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	97.64	8.35	96.50	8.92	1149	3.98*
Factors Affecting Test Performance	61.36	7.44	59.60	9.58	1114	8.64**
SIOP: Total Verbal Behavior	44.83	23.88	41.17	22.33	1138	5.70*
SIOP: Total Non-Verbal Behavior	14.37	11.75	13.07	11.29	1135	2.86
SIOP: Initiations by Subject to Peers of Same Ethnic Group	14.38	8.37	12.94	7.66	958	6.54**

M_1 = Mean for low level of teacher education

M_2 = Mean for high level of teacher education

**F significant at .01 level

*F significant at .05 level

preschool children. In the 1967-68 analyses, two groups of children were defined for the purpose of providing a similar comparison. One group consists of children in classes whose average teacher had approximately 60 months or more of experience; this figure includes experience with Head Start children and with other disadvantaged children. The second group includes children whose teachers had, on the average, under 60 months of experience.

Table 73 shows that, as in 1968-69, children with less experienced teachers made larger gains on several measures. In 1967-68, however, these differences were limited to the social-emotional domain. Children with less experienced teachers made larger gains on the Inventory of Factors Affecting Test Performance (.05 level), and in the number of initiations of social interactions with peers of other ethnic groups (.01 level); in addition, the parents of children in that group had higher educational aspirations for them (.05 level).

As with the teacher education variable, it is possible that the apparent effects of Teacher's Experience with Disadvantaged Children are artifacts of other differences in the children or the programs. In Chapter IX, the analyses of variance for Teacher's Experience are subset by Pretest IQ and by South/Non-South Residence to reduce possible confounding by these variables.

6. OSCI: Large-Muscle Materials

The analyses for 1968-69 showed strong positive relationships between children's performance on several measures, and amount of large-muscle equipment seen in the classrooms. In the 1967-68 data there was no directly comparable program variable, but a somewhat similar variable was derived from the OSCI data. The major difference is that in 1968-69, all equipment-oriented program variables represented the amount and quality of equipment in the classrooms, whether or not that equipment was in use; by contrast, the 1967-68 equipment-oriented variables designate the actual frequency of classroom use of the different types of material, as recorded on the OSCI forms.

Table 74 shows the performance of two groups of children. One group consists of children in classes where large-muscle materials (swings, balls, etc.) were

Table 73

RESULTS OF ANALYSES OF VARIANCE ON

TEACHER'S EXPERIENCE WITH DISADVANTAGED CHILDREN

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	97.70	8.86	98.38	8.71	1149	1.74
Factors Affecting Test Performance	60.90	8.52	59.59	9.32	1114	5.91*
SIOP: Initiations by Subject to Peers of Same Ethnic Group	13.78	7.67	12.94	7.97	958	2.74
SIOP: Initiations by Subject to Peers of Other Ethnic Group	5.40	5.24	4.34	3.97	863	11.22**
Educational Aspirations for Child	6.98	1.21	6.83	1.82	1063	4.07*

M_1 = Mean for low level of esperience

M_2 = Mean for high level of experience

**F significant at .01 level

* significant at .05 level

Table 74

RESULTS OF ANALYSES OF VARIANCE ON

OSCI: LARGE-MUSCLE MATERIALS

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	97.68	9.19	95.83	9.22	1449	14.51**
Factors Affecting Test Performance	61.24	8.65	60.39	9.02	1415	3.28
SIOP: Initiations by Subject to Peers of Same Ethnic Group	14.14	7.59	12.75	7.77	1248	10.11**
Perceived Effect of Head Start on Child	4.00	1.72	3.58	1.77	1350	19.64**

M_1 = Mean for low level of large-muscle materials

**F significant at .01 level

M_2 = Mean for high level of large-muscle materials

seen in use during at least 10% of the observation periods. The other group includes children in classes where such materials were in use for less than 10% of the observation periods. The results do not confirm the findings reported for the 1968-69 data. In 1967-68, use of large-muscle materials was negatively associated (.01 level) with performance on the Stanford-Binet; with the number of initiations of social interactions with peers of the same ethnic group; and with the Head Start benefits to the children, as perceived by the parents.

Possibly the difference in findings on the Stanford-Binet for the two years stems from the fact that in 1968-69 the program variable showed availability of the materials, while in 1967-68 it showed actual use. In 1967-68, a class that made extensive use of play equipment such as balls and swings may have devoted less time to cognitively oriented activities, and this may have hampered the types of cognitive development measured by the Stanford-Binet.

7. OSCI: Small-Muscle Materials

This analysis examines the relationships between children's performance and level of classroom use of small-muscle materials (e.g., puzzles and string-beads). Two groups were compared, one consisting of children in classes where small-muscle materials were in use during at least 10% of the observation periods, and the other containing children in classes where such materials were used in less than 10% of the observation periods. The results are presented in Table 75.

The level of use of small-muscle materials was not significantly related to Stanford-Binet performance, but it was positively associated (.01 level) with the frequency of the children's initiations of social interactions with peers of other ethnic groups. However, it was negatively associated with the amount of verbal social interactions of the children with peers and adults.

These two findings may seem contradictory, since the Small-Muscle Materials variable was related in opposite directions to two measures of the children's social interactions. However, a closer analysis suggests that the findings are not necessarily incompatible. One variable (SIOP: Total Verbal Behavior) is restricted to verbal behavior; it is possible that when the children were using

Table 75

RESULTS OF ANALYSES OF VARIANCE ON

OSCI: SMALL-MUSCLE MATERIALS

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	96.42	9.30	96.58	9.20	1449	0.11
Factors Affecting Test Performance	60.83	8.68	61.21	9.00	1415	0.65
SIOP: Total Verbal Behavior	46.96	22.89	41.35	20.80	1471	24.26**
SIOP: Total Non-Verbal Behavior	12.47	11.32	13.59	12.51	1468	3.21
SIOP: Initiations by Subject to Peers of Other Ethnic Group	4.26	4.45	5.34	5.48	1144	13.47**
Perceived Effect of Head Start on Child	3.57	1.65	3.42	1.85	1350	2.52

M_1 = Mean for low level of small-muscle materials

M_2 = Mean for high level of small-muscle materials

**F significant at .01 level

puzzles, string-beads, and other such materials, they had fewer occasions in which to converse with their teachers or with other children. The other dependent variable (SIOP: Initiations by Subject to Peers of Other Ethnic Group) could include non-verbal as well as verbal interactions; the non-verbal interactions may have been facilitated rather than impeded by the children's use of the small-muscle materials. For example, children may have worked together on puzzles, etc., in a manner that made it easier and more natural to interact with children of other ethnic groups.

8. OSCI: Language Materials

The split on this variable divided children into two groups, one consisting of children in classes where language materials were in use during at least 5% of the classroom observation periods, and the other containing children in classes where language materials were less frequently used.

Table 76 shows that use of language materials was positively related (.01 level of significance) to Stanford-Binet performance, as well as to the children's overall level of non-verbal social interactions (.05 level). The result on the Stanford-Binet seems entirely logical, since that instrument has a large verbal component. However, this finding appears on first consideration to contradict some of the data reported for the 1968-69 study. In that study, a program variable related to the teachers' self-reported emphasis on language activities was found negatively related to Stanford-Binet performance. One possible explanation of the apparent disagreement in findings is that the types of language activities used in 1967-68 were more effective than those in 1968-69. It seems more likely, however, that the program variables for the two years were in fact measuring different things. The 1967-68 data are based on independent time-sampled observations of what actually occurred in the classroom. By contrast, the 1968-69 data are based on the teachers' reports; these reports may reflect what the teachers thought they were required to do, rather than what they actually did. From this perspective, the 1967-68 data would seem to provide a truer picture of the relationships between language activities and children's performance.

Table 76

RESULTS OF ANALYSES OF VARIANCE ON

OSCI: LANGUAGE MATERIALS

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	95.63	9.34	96.90	9.11	1449	6.87**
Factors Affecting Test Performance	60.25	8.19	60.86	8.52	1415	1.68
SIOP: Total Verbal Behavior	44.45	22.87	43.31	21.23	1471	0.99
SIOP: Total Non-Verbal Behavior	12.61	11.76	13.85	12.12	1468	3.93*

M_1 = Mean for low level of language materials

M_2 = Mean for high level of language materials

**F significant at .01 level

*F significant at .05 level

9. OSCI: Dramatic Materials

The High Dramatic Materials group consisted of children in classes that used dramatic-play materials during at least 13% of the observation periods; Low Dramatic Materials children were those in classes that used such materials less frequently.

As Table 77 shows, the High Dramatic Materials group showed superior gains (.01 level) on two social-emotional measures: frequency of verbal social interactions with adults and peers; and degree of beneficial effects of Head Start on the children, as judged by their parents. Both findings seem logical. Most of the children's activities included in this program variable had a large verbal component, and would have given the children practice in communicating with others. Also, as noted earlier, many of the Parent Interview items used to define the "Perceived Effect of Head Start" variable were related to the childrens' ability and willingness to converse with others, and to their self-confidence. These abilities might logically have been strengthened by the children's involvement in dramatic activities.

B. SUMMARY

The results of the analyses of variance offer substantial evidence that the Head Start children, overall, gained more with some program approaches than with other approaches. Several variables related to the classroom activities, to the teachers' backgrounds, and to class and teacher stability, were significantly associated with the children's performance.

Cognitive gains, as measured by the Stanford-Binet, were enhanced by (or at least associated with) a low transiency rate among children in the classroom; that is, adjusted posttest scores on the Stanford-Binet were highest for children who had essentially the same group of classmates throughout the evaluation period. The Low Transiency group also showed greater gains in number of initiations of social interactions with their peers. On the other hand, children in classes with a high transiency rate gained more on the Inventory of Factors Affecting Test Performance, and in their benefits from Head Start as

Table 77

RESULTS OF ANALYSES OF VARIANCE ON
OSCI: DRAMATIC MATERIALS

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
SIOP: Total Verbal Behavior	41.92	21.82	46.54	21.96	1471	16.43**
Perceived Effect of Head Start on Child	3.53	1.78	3.82	1.73	1350	9.31**

M_1 = Mean for low level of dramatic materials

**F significant at .01 level

M_2 = Mean for high level of dramatic materials perceived by their parents. These latter findings may indicate that children in high-transiency classes became more accustomed to seeing new faces, and hence gained greater self-confidence and adaptiveness to new people and situations.

Teacher continuity was significantly related to only one performance measure, the Inventory of Factors Affecting Test Performance; in classes whose head teacher did not change during the evaluation period, the children made significantly greater gains in adaptiveness to the Stanford-Binet test conditions. It is possible that the changes in head teacher were perceived by children in the Low Teacher Continuity group as unsettling and anxiety-producing, and that this anxiety adversely affected their responses to the Stanford-Binet examiner and to the instrument itself.

As in the 1968-69 analyses, teachers with more education, and teachers with greater length of experience with disadvantaged children, showed smaller gains on several performance measures. Teacher's Education was negatively related to gains on the Stanford-Binet, the Inventory of Factors Affecting Test Performance, the frequency of verbal social interactions with adults and peers, and the frequency of initiations of social interactions with peers of the same ethnic group. Teacher's Experience was negatively related to gains on the Inventory of Factors Affecting Test Performance, with the frequency of initiations of social interactions with peers of other ethnic groups, and with the parents' educational aspirations for their children. Although these findings suggest that the more highly educated and experienced teachers had acquired teaching habits that interfered with their effectiveness, it is also possible that other differences in children, teachers, and classes were confounded with the Teacher's Education and Teacher's Experience variables. This second explanation is further explored in Chapter IX.

The amount of classroom use of large-muscle materials (e.g., swings, balls) was negatively associated with performance on the Stanford-Binet; with the number of initiations of social interactions with peers of the same ethnic group; and with the Head Start benefits to the children, as perceived by their parents. It is conjectured that extensive use of large-muscle play equipment may have reduced the amount of time devoted to cognitively oriented activities, thereby hampering cognitive development of the types measured by the Stanford-Binet.

Children in classes making more frequent use of small-muscle materials (e.g., puzzles, string-beads) initiated more social interactions with peers of other ethnic groups, but exhibited fewer verbal social interactions with adults and peers. One interpretation that may help to reconcile these findings is that an extensive use of the materials inhibited verbal expression, but may have facilitated non-verbal interactions among different ethnic groups; such cross-ethnic interactions were quite rare at the start of the evaluation period, and even a small increase would be significant.

The frequency of use of puppets or other dramatic-play materials was positively associated with performance on two social-emotional measures: frequency of verbally oriented social interactions with adults and peers; and degree of beneficial effects of Head Start on the children as judged by their parents. A possible explanation for both findings is that, in classes where there was frequent use of dramatic materials, the children became more accustomed to speaking up in group situations, and thereby gained greater self-confidence and ability to communicate with others.

CHAPTER IX

RELATIONSHIPS BETWEEN PROGRAM APPROACHES AND PERFORMANCE FOR DIFFERENT SUBGROUPS OF CHILDREN

The analyses reported in Chapter VII showed that certain subsetting variables (i.e., initial IQ and urban/non-urban residence) were related to differences in performance gains. Chapter VIII showed that some differences in gains were associated with differences in program approaches. The question next to be considered is: Did the program variables have different relationships with the performance measures for different subgroups of children? In other words, were particular program approaches consistently associated with higher performance for all subgroups, or did such associations hold only for certain subgroups? Were some program approaches positively associated with performance gains for one subgroup, and negatively associated for another subgroup?

The major method selected for studying the relationships between program variables, child subgrouping variables, and performance, was to perform one-way analyses of variance for different subsets of children; this method provided independent measures of the association between program variables and performance for children of different age levels, different pretest IQ's, etc.

The following section of this chapter discusses the variables used to define different subsets of the children; specifies the cutting points on each of the subsetting variables; and indicates reasons for the selection of the variables. Following this discussion, the results of the new analyses of variance are presented for the different subgroups, and the findings are then summarized.

A. SUBSETTING VARIABLES

Three variables, child's age, initial IQ, and urban/non-urban residence, were used to define subsets of Head Start children, so that separate analyses of variance could be performed to determine the differential associations between program variables and performance measures for different groups. In addition, for two of the program variables, Teacher's Education and Teacher's Experience with Disadvantaged Children, separate analyses of variance were performed for

Southern and non-Southern children; this was done to eliminate any possible confounding of the two teacher variables with Southern vs. non-Southern regional differences.

1. Child's Initial IQ

Information about children's initial intelligence can be readily obtained in the Head Start centers, and could be used as a practical basis for selecting different programs for children of different initial IQ levels if the evidence supports the value of such a policy. Decisions could be made at the center level, at the class level, or conceivably even for groups within classes. Furthermore, IQ level was found (Chapter VII) to be highly related to overall performance gains. For subsetting purposes, initial (pretest) IQ was divided into three groups: one group with IQ's under 85; a second group with IQ's between 85 and 95; and a third group with IQ's of over 95.

2. Child's Age

Information about age is readily available to the Head Start centers, and this variable seems an eminently practical one to use for making decisions about different program treatments. Even though age was not strongly related to overall gain, as shown in Chapter VII, it was felt that it might interact with program approach, e.g., that an effective approach for older children might be much less successful with younger children. Several such interactions were found in the analyses of the 1968-69 data.

The age (expressed in months) was the child's age at the posttest administration of the Stanford-Binet. Children were divided into two age groups: children under five years (60 months); and children five years old or more.

3. Urban vs. Non-Urban Residence

This variable was used in the 1968-69 analyses, and showed several interesting interactions with the associations between program variables and performance measures. In addition, it could provide a fairly simple basis for Center-level decisions about the most effective program approaches for different sites.

The variable is derived from the Master Data Card. For subsetting purposes there are two groups: Urban (children in cities of 50,000 population or larger), and Non-Urban (children in smaller town, suburbs, or rural areas).

4. South vs. Non-South Residence

As noted earlier, this variable was used as a subsetter in the analyses of two teacher variables, to avoid possible confounding of those teacher variables with regional effects. The South is defined as including the South Atlantic, East South Central, and West South Central portions of the country. All other states are included in the non-South subset.

B. RESULTS OF ANALYSES FOR DIFFERENT SUBGROUPS

Before describing the detailed findings on the analyses of variance for different subgroups, it seems worthwhile to repeat a discussion presented in the 1968-69 report (TM-4862/000), concerning the interpretation of the results. The analyses were designed with the point of view that the study was to a large extent exploratory, or hypothesis-generating, rather than totally definitive. Such a viewpoint seemed consistent with the fact that there were many uncontrolled sources of variance whose actual effects were largely unknown; that there were no no-treatment control groups; and that on some variables there were fairly extensive missing data (as shown in Chapters III through V by the variations in sample sizes for different variables). For these reasons, greater emphasis was placed in the analyses on obtaining useful clues about program features that might be manipulated in the future with some reasonable probability that they will have desirable impact on effectiveness, than with applying the most stringent tests of significance. In other words, procedures were deliberately selected that were likely to produce a certain number of false leads, rather than to overlook promising ones. One of these intentional choices, discussed above, was the use of data from a single subset of children rather than from the entire evaluation sample to adjust the posttest performance scores. This choice most likely has the effect of increasing the number of ANOVA's on which the calculated F-ratios will reach any selected probability level.

The second factor contributing to the likelihood of producing false positives is the absence of any mathematical correction for the fact that large numbers of analyses were performed, involving large numbers of comparisons among treatment conditions. Statistical tests were applied of the sort conventionally used where hypothses have been identified in advance of selecting samples or collecting data, and where only a small number of comparisons are made (i.e., in traditional control-group comparison experiments). These conditions do not hold in the present quasi-experimental study, where the large number of comparisons means that a certain number of those comparisons will reach a given level of probability by chance alone.

Rather than attempt to correct for these sources of false positives by any mathematical formulas, the choice was made simply to present the uncorrected findings but to distinguish sources of variance (i.e., program effects) that reach two different levels of probability: the .05 level and the .01 level. Use of the more stringent .01-level criterion for rejection of the null hypothesis will eliminate many of the relationships that may have been spurious artifacts of uncontrolled variables, pure chance relationships among the many comparisons, etc. On the other hand, data are also presented on findings at the .05 level, since there may be clues here about program effects that should be further studied in future Head Start programs. In the following verbal summaries of the results of the ANOVA's, relationships at both the .05 level and .01 level are discussed, but greater emphasis is placed on those reaching the .01 level.

Tables 77 through 106 present the results of the analyses of variance for the different subgroups of children. In each table, the subsetting variable (e.g., Child's Age) is identified across the top of the table, with the two (or three) values of that variable designated immediately below. The left-hand column of the table lists the dependent variables included in the analyses; these are identical in every case to the variables studied in the analyses of variance for the total (non-subset) samples. Because of the large quantities of data involved, the tables are simplified by including the actual cell values only for those analyses that yielded significant F-ratios. Cell entries in the first column following the list of dependent variables are the mean adjusted posttest scores for the lowest level of the program variable; then follow the mean scores for the remaining levels of the program variable. In the next column, the total degrees of freedom are indicated, followed by the F-ratios. A double asterisk after an F value means that the relationship between program variable and dependent variable was significant at the .01 level; a single asterisk indicates an .05 level of significance.

1. Class Transiency

a. Variation with Child's Pretest IQ (Table 78)

The largest number of significant relationship between class transiency and children's performance were in the Mid IQ group (i.e., children with pretest IQ from 85 to 95); however, for this group, Stanford-Binet gain was not one of the significantly related performance measures. For both the Low IQ group (below 85) and the High IQ group (above 95), significantly larger IQ gains were made by children in classes with low transiency rates, i.e., in classes where relatively few children transferred in or out during the evaluation period. By contrast, ability to adapt to the Stanford-Binet test conditions was lower for children in the low-transiency classes.

All significant relationships shown by the subsets are in the same direction as those already discussed for the total sample of children (Chapter VIII). One additional finding of interest, however, is that, for the Mid IQ group only, class transiency was significantly related to the frequency of the children's verbal interactions with peers and adults; there was a greater gain in this dimension for children in low-transiency classes. This relationship did not reach significance for the total sample of children.

b. Variations with Child's Age (Table 79)

Virtually all of the significant associations found for the total sample were also found for either or both of the age-related subgroups; in no case was there a reversal in the direction of those associations from that for the total sample. In general, age does not appear to have had a strong influence on relationships between class trassiency and children's performance.

Table 78

ANALYSIS OF VARIANCE ON CLASS TRANSIENCY

SUBSET BY PRETEST IQ

DEPENDENT VARIABLE	LOW IQ				MID IQ				HIGH IQ			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	97.20	93.38	368	14.30**					97.23	95.06	585	7.05**
Factors Affecting Test Performance					59.73	61.63	462	4.48*				
SIOP: Total Verbal Behavior					45.34	39.75	448	6.54*				
SIOP: Initiations by Subject to Peers of Same Ethnic Group												
SIOP: Initiations by Subject to Peers of Other Ethnic Group	4.87	3.68	291	4.71*	4.78	3.48	353	5.11*				
Perceived Effect of Head Start on Child					3.61	4.01	412	4.02*	3.59	4.09	510	8.30**
Educational Aspirations for Child	6.65	6.97	331	4.08*	6.92	7.30	413	10.04**				

M_1 = Mean for low transiency

M_2 = Mean for high transiency

** F significant at .01 level

* F significant at .05 level

Table 79

ANALYSIS OF VARIANCE ON CLASS TRANSIENCY

SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	YOUNG				OLD			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	98.10	96.20	791	7.83**	96.03	93.06	649	14.17**
Factors Affecting Test Performance					60.51	62.04	642	5.03*
SIOP: Total Verbal Behavior								
SIOP: Initiations by Subject to Peers of Same Ethnic Group								
SIOP: Initiations by Subject to Peers of Other Ethnic Group	4.77	3.68	573	6.89**	5.35	4.23	486	4.43*
Perceived Effect of Head Start on Child	3.64	4.10	669	9.60**				
Educational Aspirations for Child					6.84	7.10	578	6.20*

M_1 = Mean for low transiency

M_2 = Mean for high transiency

** F significant at .01 level

* F significant at .05 level

c. Variations with Urban/Non-Urban Residence (Table 80)

This subsetting variable is of particular interest because the Urban and Non-Urban children showed no overlap in their significant relationships between class transiency and performance. The relationships between class transiency and performance on the Stanford-Binet, the Inventory of Factors Affecting Test Performance, and Initiations by Subject to Peers of Other Ethnic Group, were exclusive to the Urban subgroup; conversely, only among Non-Urban children was transiency significantly related to Total Verbal Behavior, Perceived Effect of Head Start on Child, and Educational Aspirations for Child. All of these relationships were in the directions previously discussed for the total sample (Chapter VIII).

2. Teacher Continuity

a. Variations with Child's Pretest IQ (Table 81)

Only one significant relationship was found between Teacher Continuity and performance for the whole sample (see Chapter VIII); this was with the Inventory of Factors Affecting Test Performance. Table 81 shows that this relationship was primarily in the Low IQ group; for this group, children in classes with greater teacher continuity made significantly larger gains in adaptiveness to the Stanford-Binet test conditions.

b. Variations with Child's Age (Table 82)

As in the total sample, there was a significant positive relationship within the Young subgroup between Teacher Continuity and the children's ability to adapt to the Stanford-Binet test conditions. Interestingly, the Young children also showed a significant positive relationship between Teacher Continuity and Stanford-Binet IQ gains; this effect did not reach significance for the total sample. The Old subgroup showed no significant relationships.

c. Variations with Urban/Non-Urban Residence (Table 83)

The significant positive relationship between Teacher Continuity and the children's ability to adapt to the Stanford-Binet test conditions appeared only in the Urban subgroup.

Table 80

ANALYSIS OF VARIANCE ON CLASS TRANSIENCY

SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN				NON-URBAN			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	97.54	94.48	662	18.78**				
Factors Affecting Test Performance	58.97	61.01	634	8.11**				
SIOP: Total Verbal Behavior					46.02	41.98	798	4.79*
SIOP: Initiations by Subject to Peers of Same Ethnic Group								
SIOP: Initiations by Subject to Peers of Other Ethnic Group	4.16	3.56	504	5.57*				
Perceived Effect of Head Start on Child					3.40	3.70	774	4.13*
Educational Aspirations for Child					6.72	7.01	787	6.77**

M_1 = Mean for low transiency

M_2 = Mean for high transiency

** F significant at .01 level

* F significant at .05 level

Table 81

ANALYSIS OF VARIANCE ON TEACHER CONTINUITY

SUBSET BY PRETEST IQ

DEPENDENT VARIABLE	LOW IQ				MID IQ				HIGH IQ			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet												
Factors Affecting Test Performance	56.25	59.14	362	4.10*								

M_1 = Mean for low level of teacher continuity

M_2 = Mean for high level of teacher continuity

* F significant at .05 level

Table 82

ANALYSIS OF VARIANCE ON TEACHER CONTINUITY

SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	YOUNG				OLD			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	96.30	98.06	790	4.55*				
Factors Affecting Test Performance	57.34	59.89	760	8.31**				

M_1 = Mean for low level of teacher continuity

M_2 = Mean for high level of teacher continuity

** F significant at .01 level

* F significant at .05 level

Table 83

ANALYSIS OF VARIANCE ON TEACHER CONTINUITY
SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN				NON-URBAN			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet Factors Affecting Test Performance	57.14	59.75	625	8.49**				

M_1 = Mean for low level of teacher continuity

M_2 = Mean for high level of teacher continuity

** F significant at .01 level

3. Pupil/Teacher Ratio

a. Variations with Child's Pretest IQ (Table 84)

No significant relationships between Pupil/Teacher Ratio and children's performance were found in the Mid IQ group. In the Low IQ group and the High IQ group, Pupil/Teacher Ratio was significantly related to the children's adaptiveness to the Stanford-Binet test conditions; for both groups, children in classes with smaller Pupil/Teacher Ratios made larger gains on the Inventory of Factors Affecting Test Performance. For the Low IQ group, Pupil/Teacher Ratio was significantly related to Total Verbal Behavior, and for the High IQ group, it was related to Initiations by Subject to Peers of Same Ethnic Group. The former relationship did not appear in the pooled data for the total sample (see Chapter VIII).

b. Variations with Child's Age (Table 85)

The significant relationships between Pupil/Teacher Ratio and children's performance were found exclusively in the Young subgroup; for this group, children in classes with smaller Pupil/Teacher Ratios made superior gains on the Inventory of Factors Affecting Test Performance, and in Initiations by Subject to Peers of Same Ethnic Group.

c. Variations with Urban/Non-Urban Residence (Table 86)

The significant relationships of the Pupil/Teacher Ratio with the children's performance on the Inventory of Factors Affecting Test Performance, and on Initiations by Subject to Peers of Same Ethnic Group, were exclusively in the Urban subgroup. These relationships were in the direction described for the total sample.

4. Teacher's Education

a. Variations with Child's Pretest IQ (Table 87)

Two relationships between Teacher's Education and children's performance that were found significant for the total sample, failed to reach significance for any of the pretest IQ subgroups; these relationships involved the Stanford-Binet,

Table 84

ANALYSIS OF VARIANCE ON PUPIL/TEACHER RATIO

SUBSET BY PRETEST IQ

DEPENDENT VARIABLE	LOW IQ				MID IQ				HIGH IQ			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet												
Factors Affecting Test Performance	59.70	56.18	258	7.02**					61.71	59.49	465	11.31**
SIOP: Total Verbal Behavior	39.51	45.62	253	5.37*								
SIOP: Initiations by Subject to Peers of Same Ethnic Group									14.31	12.29	388	5.77*
SIOP: Initiations by Subject to Peers of Other Ethnic Group												

M_1 = Mean for low pupil/teacher ratio

M_2 = Mean for high pupil/teacher ratio

**** F significant at .01 level**

Table 85

ANALYSIS OF VARIANCE ON PUPIL/TEACHER RATIO

SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	YOUNG				OLD			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet								
Factors Affecting Test Performance	60.40	57.01	608	17.75**				
SIOP: Total Verbal Behavior								
SIOP: Initiations by Subject to Peers of Same Ethnic Group	13.81	11.13	503	12.36**				
SIOP: Initiations by Subject to Peers of Other Ethnic Group								

M_1 = Mean for low pupil/teacher ratio

M_2 = Mean for high pupil/teacher ratio

** F significant at .01 level

Table 86

ANALYSIS OF VARIANCE ON PUPIL/TEACHER RATIO

SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN				NON-URBAN			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet								
Factors Affecting Test Performance	60.06	57.23	518	10.49**				
SIOP: Total Verbal Behavior								
SIOP: Initiations by Subject to Peers of Same Ethnic Group	13.20	10.04	438	17.10**				
SIOP: Initiations by Subject to Peers of Other Ethnic Group								

M_1 = Mean for low pupil/teacher ratio

M_2 = Mean for high pupil/teacher ratio

** F significant at .01 level

Table 87

ANALYSIS OF VARIANCE ON TEACHER'S EDUCATION

SUBSET BY PRETEST IQ

DEPENDENT VARIABLE	LOW IQ				MID IQ				HIGH IQ			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet												
Factors Affecting Test Performance	61.13	56.95	259	9.36**								
SIOP: Total Verbal Behavior					45.77	40.03	357	4.23*				
SIOP: Total Non-Verbal Behavior	17.78	11.81	256	13.90**								
SIOP: Initiations by Subject to Peers of Same Ethnic Group												

M_1 = Mean for low level of teacher's education

M_2 = Mean for high level of teacher's education

** F significant at .01 level

* F significant at .05 level

and Initiations by Subject to Peers of same Ethnic Group. However, the negative relationship between Teacher's Education and Total Verbal Behavior was still present in the Mid IQ group; for the Low IQ group, Teacher's Education was negatively related to the Inventory of Factors Affecting Test Performance. Furthermore, a new relationship appeared in the data for the Low IQ group; this was a negative association between Teacher's Education and Total Non-Verbal Behavior.

b. Variations with Child's Age (Table 88)

Most of the significant negative relationships between Teacher's Education and children's performance were found in the Old subgroup. These relationships tended to be weaker than those for the total sample (i.e., none reached the .01 level); this weakening may, in part, reflect the smaller sample sizes created by the subsetting process.

c. Variations with Urban/Non-Urban Residence (Table 89)

Although there were differences in the specific measures involved, both the Urban and Non-Urban subgroups tended to show negative relationships between Teacher's Education and children's performance. One exception, in the case of the Urban subgroup, is the positive relationship of Teacher's Education with the children's Total Non-Verbal Behavior.

d. Variations with South/Non-South Residence (Table 90)

Subsetting by South/Non-South Residence eliminated the significant negative relationship between Teacher's Education and children's Stanford-Binet gains. This suggests that the relationships found between those two variables for the total sample might have been an artifact of confounding with regional differences. Alternatively, the same weakening effect might have been created by the reduction in sample size with subsetting. In any event, the subsetting did not eliminate the negative relationships of Teacher's Education with several social-emotional measures.

Table 88

ANALYSIS OF VARIANCE ON TEACHER'S EDUCATION

SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	YOUNG				OLD			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet					97.00	94.95	503	6.16*
Factors Affecting Test Performance					61.83	60.17	499	4.29*
SIOP: Total Verbal Behavior					47.64	42.99	477	4.20*
SIOP: Total Non-Verbal Behavior					14.70	12.53	465	4.72*
SIOP: Initiations by Subject to Peers of Same Ethnic Group	14.41	12.55	508	5.19*				

M_1 = Mean for low level of teacher's education

** F significant at .05 level

M_2 = Mean for high level of teacher's education

Table 89

ANALYSIS OF VARIANCE ON TEACHER'S EDUCATION

SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN				NON-URBAN			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	98.19	96.32	551	3.88*				
Factors Affecting Test Performance	61.13	59.01	523	4.30*				
SIOP: Total Verbal Behavior					49.32	43.18	585	10.02**
SIOP: Total Non-Verbal Behavior	11.08	13.85	559	4.66*	16.21	12.18	572	18.05**
SIOP: Initiations by Subject to Peers of Same Ethnic Group								

M_1 = Mean for low level of teacher's education

M_2 = Mean for high level of teacher's education

** F significant at .01 level

* F significant at .05 level

Table 90

ANALYSIS OF VARIANCE ON TEACHER'S EDUCATION

SUBSET BY SOUTH/NON-SOUTH RESIDENCE

DEPENDENT VARIABLE	SOUTH				NON-SOUTH			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet								
Factors Affecting Test Performance					60.86	59.33	855	4.00*
SIOP: Total Verbal Behavior	50.61	42.79	261	7.02**				
SIOP: Total Non-Verbal Behavior	16.86	11.67	249	11.47**				
SIOP: Initiations by Subject to Peers of Same Ethnic Group					15.41	12.96	714	11.61**

M_1 = Mean for low level of teacher's education

M_2 = Mean for high level of teacher's education

** F significant at .01 level

* F significant at .05 level

5. Teacher's Experience with Disadvantaged Children

a. Variations with Child's Pretest IQ (Table 91)

In the analysis for the total sample (see Chapter VIII), Teacher's Experience was found negatively related at the .01 level to one performance measure, and negatively related at the .05 level to two other variables. When the data were subset by Pretest IQ, only the .01 level relationship remained; for the Low IQ group and the Mid IQ group, Teacher's Experience was negatively related (.01 level) to Initiations by Subject to Peers of Other Ethnic Group.

b. Variations with Child's Age (Table 92)

The strongest relationships between Teacher's Experience and performance were found in the Young subgroup. For this group, Teacher's Experience was negatively related to the children's gains on the Inventory of Factors Affecting Test Performance, and to their Initations by Subject to Peers of Other Ethnic Group.

c. Variations with Urban/Non-Urban Residence (Table 93)

Urban children showed a significant negative relationship between Teacher's Experience and performance on the Inventory of Factors Affecting Test Performance; for this same group, Teacher's Experience was negatively related to the parents' educational aspirations for their children. The Non-Urban group showed a negative relationship between Teacher's Experience and Children's Initiations by Subject to Peers of Other Ethnic Group.

d. Variations with South/Non-South Residence (Table 94)

Subsetting by South/Non-South Residence weakened the relationships found in the total sample. For Southern children, Teacher's Experience was negatively associated with only one performance measure, the Inventory of Factors Affecting Test Performance. For the Non-Southern subgroup, the negative relationship involved only the children's Initiations by Subject to Peers of Other Ethnic Group.

Table 91

ANALYSIS OF VARIANCE ON TEACHER'S EXPERIENCE WITH DISADVANTAGED CHILDREN

SUBSET BY PRETEST IQ

DEPENDENT VARIABLE	LOW IQ				MID IQ				HIGH IQ			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet												
Factors Affecting Test Performance												
SIOP: Initiations by Subject to Peers of Same Ethnic Group												
SIOP: Initiations by Subject to Peers of Other Ethnic Group	5.47	4.16	200	5.21*	5.46	3.80	273	7.92**				
Educational Aspirations for Child												

M_1 = Mean for low level of experience

M_2 = Mean for high level of experience

** F significant at .01 level

* F significant at .05 level

Table 92

ANALYSIS OF VARIANCE ON TEACHER'S EXPERIENCE WITH DISADVANTAGED CHILDREN

SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	YOUNG				OLD			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet								
Factors Affecting Test Performance	60.75	59.14	614	4.48*				
SIOP: Initiations by Subject to Peers of Same Ethnic Group								
SIOP: Initiations by Subject to Peers of Other Ethnic Group	4.96	3.84	461	8.67**				
Educational Aspirations for Child					6.97	6.72	455	5.82*

M_1 = Mean for low level of experience

M_2 = Mean for high level of experience

** F significant at .01 level

* F significant at .05 level

Table 93

ANALYSIS OF VARIANCE ON TEACHER'S EXPERIENCE WITH DISADVANTAGED CHILDREN SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN				NON-URBAN			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet								
Factors Affecting Test Performance	61.01	58.91	523	6.23*				
SIOP: Initiations by Subject to Peers of Same Ethnic Group								
SIOP: Initiations by Subject to Peers of Other Ethnic Group					6.08	4.61	441	8.11**
Educational Aspirations for Child	7.30	6.96	469	8.69**				

M_1 = Mean for low level of experience

M_2 = Mean for high level of experience

** F significant at .01 level

* F significant at .05 level

Table 94

ANALYSIS OF VARIANCE ON TEACHER'S EXPERIENCE WITH DISADVANTAGED CHILDREN SUBSET BY SOUTH/NON-SOUTH RESIDENCE

DEPENDENT VARIABLE	SOUTH				NON-SOUTH			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet								
Factors Affecting Test Performance	62.83	59.56	258	12.94**				
SIOP: Initiations by Subject to Peers of Same Ethnic Group								
SIOP: Initiations by Subject to Peers of Other Ethnic Group					5.13	4.01	617	9.33**
Educational Aspirations for Child								

M_1 = Mean for low level of experience

** F significant at .01 level

M_2 = Mean for high level of experience

6. OSCI: Large-Muscle Materials

a. Variations with Child's Pretest IQ (Table 95)

A negative relationship between the level of class use of large-muscle materials, and Stanford-Binet performance, was found in the Low and High IQ subgroups, but not in the Mid IQ subgroup. All three groups showed a negative relationship between large-muscle materials and the Parents' Perceived Effect of Head Start on Child. The program variable's negative association with Initiations by Subject to Peers of Same Ethnic Group appeared only in the Mid IQ subgroup.

b. Variations with Child's Age (Table 96)

The negative relationship between large-muscle materials and children's performance on the Stanford-Binet was found exclusively in the Old subgroup, while both groups showed a negative relationship between large-muscle materials and the parents' Perceived Effect of Head Start on Child.

c. Variations with Urban/Non-Urban Residence (Table 97)

Both Urban and Non-Urban children showed the negative relationship between large-muscle materials and Stanford-Binet scores. Several other "effects" of the program variable were divided between the Urban and Non-Urban subgroups.

7. OSCI: Small-Muscle Materials

a. Variations with Pretest IQ (Table 98)

In general, the three IQ subgroups show the same relationships found in the total sample between level of use of small-muscle materials, and children's performance; the combination of performance measures involved in those relationships is different for each subgroup, however. Also, the Mid IQ and High IQ subgroups show a relationship not found in the total sample for those groups; the level of use of small-muscle materials was positively associated with the children's level of Total Non-Verbal Behavior.

Table 95

ANALYSIS OF VARIANCE ON OSCI: LARGE-MUSCLE MATERIALS

SUBSET BY PRETEST IQ

DEPENDENT VARIABLE	LOW IQ				MID IQ				HIGH IQ			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	98.01	94.77	373	11.26**					97.58	96.09	592	3.89*
Factors Affecting Test Performance												
SIOP: Initiations by Subject to Peers of Same Ethnic Group					13.79	12.23	387	4.10*				
Perceived Effect of Head Start on Child	3.89	3.52	342	4.25*	4.13	3.58	409	9.37**	4.06	3.68	515	6.03*

M_1 = Mean for low level of large-muscle materials

M_2 = Mean for high level of large-muscle materials

** F significant at .01 level

* F significant at .05 level

Table 96

ANALYSIS OF VARIANCE ON OSCI: LARGE-MUSCLE MATERIALS

SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	YOUNG				OLD			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet					97.09	93.74	659	21.59**
Factors Affecting Test Performance								
SIOP: Initiations by Subject to Peers of Same Ethnic Group	14.78	12.22	630	16.07**				
Perceived Effect of Head Start on Child	4.15	3.74	665	8.96**	3.91	3.42	596	11.57**

M_1 = Mean for low level of large-muscle materials

** F significant at .01 level

M_2 = Mean for high level of large-muscle materials

Table 97

ANALYSIS OF VARIANCE ON OSCI: LARGE-MUSCLE MATERIALS

SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN				NON-URBAN			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	97.63	95.84	634	6.23*	97.73	95.81	808	8.52**
Factors Affecting Test Performance					61.89	60.41	802	5.86*
SIOP: Initiations by Subject to Peers of Same Ethnic Group	13.79	11.38	509	12.63**				
Perceived Effect of Head Start on Child					3.96	3.18	803	47.52**

M_1 = Mean for low level of large-muscle materials

M_2 = Mean for high level of large-muscle materials

** F significant at .01 level

* F significant at .05 level

Table 98

ANALYSIS OF VARIANCE ON OSCI: SMALL-MUSCLE MATERIALS

SUBSET BY PRETEST IQ

DEPENDENT VARIABLE	LOW IQ				MID IQ				HIGH IQ			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet												
Factors Affecting Test Performance												
SIOP: Total Verbal Behavior	44.92	37.91	361	11.15**					51.71	42.50	571	22.93**
SIOP: Total Non-Verbal Behavior					11.37	14.49	447	8.08**	11.33	13.40	563	4.85*
SIOP: Initiations by Subject to Peers of Other Ethnic Group					3.67	5.14	352	7.63**				
Perceived Effect of Head Start on Child												

M_1 = Mean for low level of small-muscle materials

M_2 = Mean for high level of small-muscle materials

** F significant at .01 level

* F significant at .05 level

b. Variations with Child's Age (Table 99)

Both the Young and Old subgroups showed the same associations found in the total sample; that is, frequency of use of small-muscle materials was positively related to the children's Initiations by Subject to Peers of Other Ethnic Group, and negatively related to their Total Verbal Behavior. In addition, two other relationships were found that had not appeared in the analysis for the total sample. For the Young subgroup, the level of use of small-muscle materials was positively related to the children's Total Non-Verbal Behavior; for the Old subgroup, it was negatively related to the Head Start program's beneficial effect on the children as perceived by their parents.

c. Variations with Urban/Non-Urban Residence (Table 100)

Both Urban and Non-Urban children showed several significant relationships between the level of use of small-muscle materials and children's performance in the social-emotional domain. These are generally in the same direction found for the total sample. The relationships for the two subgroups involve somewhat different performance measures, however, and there were three new relationships that were not evident in the analysis for the total sample. For Urban children, the level of use of small-muscle materials was positively related to performance on the Inventory of Factors Affecting Test Performance, and on Total Non-Verbal Behavior; for Non-Urban children, it was negatively related to the parents' Perceived Effect of Head Start on Child.

8. OSCI: Language Materials

a. Variations with Child's Pretest IQ (Table 101)

The positive relationship found in the total sample between level of use of language materials, and gains on the Stanford-Binet, appears only in the Mid IQ subgroup. That subgroup also showed a positive relationship between the Language Materials variable and performance on the Inventory of Factors Affecting Test Performance. None of the groups showed an association between Language Materials and Total Non-Verbal Behavior, as was found for the total sample.

Table 99

ANALYSIS OF VARIANCE ON OSCI: SMALL-MUSCLE MATERIALS

SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	YOUNG				OLD			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet								
Factors Affecting Test Performance								
SIOP: Total Verbal Behavior	45.98	41.49	748	7.90**	49.14	41.13	635	20.46**
SIOP: Total Non-Verbal Behavior	11.51	13.53	755	4.90*				
SIOP: Initiations by Subject to Peers of Other Ethnic Group	3.79	5.01	573	10.31**	4.63	5.71	495	4.76*
Perceived Effect of Head Start on Child					3.57	3.16	596	8.31**

M_1 = Mean for low level of small-muscle materials

M_2 = Mean for high level of small-muscle materials

** F significant at .01 level

* F significant at .05 level

Table 100

ANALYSIS OF VARIANCE ON OSCI: SMALL-MUSCLE MATERIALS

SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN				NON-URBAN			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet								
Factors Affecting Test Performance	59.45	61.11	606	4.66*				
SIOP: Total Verbal Behavior	46.28	40.20	629	10.72**	47.38	42.65	837	9.83**
SIOP: Total Non-Verbal Behavior	10.36	13.28	640	9.47**				
SIOP: Initiations by Subject to Peers of Other Ethnic Group					4.68	6.70	652	20.95**
Perceived Effect of Head Start on Child					3.41	3.15	803	4.85*

M_1 = Mean for low level of small-muscle materials

M_2 = Mean for high level of small-muscle materials

** F significant at .01 level

* F significant at .05 level

Table 101

ANALYSIS OF VARIANCE ON OSCI: LANGUAGE MATERIALS

SUBSET BY PRETEST IQ

DEPENDENT VARIABLE	LOW IQ				MID IQ				HIGH IQ			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet					95.80	97.39	482	3.69**				
Factors Affecting Test Performance					59.29	61.75	457	8.33**				
SIOP: Total Verbal Behavior	43.26	38.27	361	5.62*								
SIOP: Total Non-Verbal Behavior												

M_1 = Mean for low level of language materials

M_2 = Mean for high level of language materials

** F significant at .01 level

* F significant at .05 level

b. Variations with Child's Age (Table 102)

The Young subgroup showed several significant relationships between the Language Materials variable and the children's performance on cognitive and social-emotional measures. No significant associations were found for the Old subgroup.

c. Variations with Urban/Non-Urban Residence (Table 103)

Only the Non-Urban subgroup showed a significant relationship between Language Materials and cognitive (Stanford-Binet) performance, whereas the program variable's relationships with social-emotional performance measures was limited to the Urban subgroup.

9. OSCI: Dramatic Materials

a. Variations with Child's Pretest IQ (Table 104)

All three IQ subgroups showed a positive relationship between the level of use of dramatic materials, and the children's amount of Total Verbal Behavior. The program variable's positive association with the parents' Perceived Effect of Head Start on Child was found only in the High IQ subgroup.

b. Variations with Child's Age (Table 105)

In the Young subgroup, the Dramatic Materials variable was positively related to both Total Verbal Behavior, and Perceived Effect of Head Start on Child. In the Old subgroup, only the relationship with Total Verbal Behavior was found.

c. Variations with Urban/Non-Urban Residence (Table 106)

Urban children showed a positive relationship between the level of classroom use of dramatic materials, and the children's Total Verbal Behavior. In the Non-Urban subgroup, the Dramtic Materials variable was positively related to the parents' Perceived Effect of Head Start on Child.

C. SUMMARY

The data reported in this chapter show, as in the earlier report on the 1968-69 data, that there were interaction effects between program variables and

Table 102

ANALYSIS OF VARIANCE ON OSCI: LANGUAGE MATERIALS

SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	YOUNG				OLD			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	96.59	97.82	789	3.61*				
Factors Affecting Test Performance	59.20	61.08	759	7.54**				
SIOP: Total Verbal Behavior	45.21	40.98	748	7.31**				
SIOP: Total Non-Verbal Behavior								

M_1 = Mean for low level of language materials

M_2 = Mean for high level of language materials

** F significant at .01 level

* F significant at .05 level

Table 103

ANALYSIS OF VARIANCE ON OSCI: LANGUAGE MATERIALS

SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN				NON-URBAN			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet					95.59	97.08	808	5.18*
Factors Affecting Test Performance	59.10	60.94	606	6.36*				
SIOP: Total Verbal Behavior	43.88	40.34	629	3.88*				
SIOP: Total Non-Verbal Behavior								

M_1 = Mean for low level of language materials

* F significant at .01 level

M_2 = Mean for high level of language materials

Table 104

ANALYSIS OF VARIANCE ON OSCI: DRAMATIC MATERIALS

SUBSET BY PRETEST IQ

DEPENDENT VARIABLE	LOW IQ				MID IQ				HIGH IQ			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
SIOP: Total Verbal Behavior	38.24	43.74	361	6.78**	40.77	46.51	449	8.33**	44.58	50.77	571	10.04**
Perceived Effect of Head Start on Child									3.57	3.98	515	6.92**

M_1 = Mean for low level of dramatic materials

M_2 = Mean for high level of dramatic materials

** F significant at .01 level

Table 105

ANALYSIS OF VARIANCE ON OSCI: DRAMATIC MATEPIALS

SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	YOUNG				OLD			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
SIOP: Total Verbal Behavior	41.15	45.83	748	8.97**	43.22	48.38	635	8.32**
Perceived Effect of Head Start on Child	3.56	4.06	665	13.57**				

M_1 = Mean for low level of dramatic materials

** F significant at .01 level

M_2 = Mean for high level of dramatic materials

Table 105

ANALYSIS OF VARIANCE ON OSCI: DRAMATIC MATERIALS

SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN				NON-URBAN			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
SIOP: Total Verbal Behavior	38.60	45.92	629	16.81**				
Perceived Effect of Head Start on Child					3.25	3.74	803	17.16**

M_1 = Mean for low level of dramatic materials

M_2 = Mean for high level of dramatic materials

** F significant at .01 level

child-description variables. That is, a program approach that was associated with superior performance for one group of children was not necessarily superior for another group.

In a few cases, subsetting of the data had the effect of washing out certain significant relationships that had been found in the analyses of the total sample. For example, the total-sample analysis showed a significant negative association (.05 level) between Teacher's Education and children's Stanford-Binet gains. However, when the data were subset by Southern vs. Non-Southern residence, neither subgroup showed that relationship with Stanford-Binet performance. Such a result may indicate that, in the total-sample analysis, the subsetting variable (e.g., South/Non-South Residence) was confounded with the program variable (e.g., Teacher's Education). This could have produced a spurious relationship which would have been eliminated when the data were subset. It should be noted, however, that subsetting also had the effect of reducing sample sizes; this, in itself, could have brought marginally significant relationships to a point that failed to reach the .05 level of significance.

In several other instances, subsetting of the data revealed significant relationships that were obscured in the total-sample analyses. For example, in the total-sample analysis for Small-Muscle Materials, no significant relationship was found with the children's performance on the Inventory of Factors Affecting Test Performance (FATP). Such a relationship did appear, however, for the Urban subgroup; for that group, level of class use of small-muscle materials was positively associated with gains on the FATP.

There were numerous situations in which a significant relationship was found between a program variable and a performance measure for a particular subgroup, but not for other subgroups defined by that same subsetting variable. For example, in the Young subgroup, a higher Pupil/Teacher Ratio was associated with significantly poorer gains on the Inventory of Factors Affecting Test Performance, and on the children's Initiations by Subject to Peers of Same Ethnic Group. A possible interpretation is that the types of small-group interactions made possible by a low Pupil/Teacher Ratio were important for certain dimensions of social-emotional development in the younger children, whereas the older children had already developed more stable social-emotional patterns that were less influenced by the classroom environment. However, caution must be taken in interpreting this finding (as well as other findings discussed in this summary), since only an association of variables, not a cause-and-effect relationship, has been demonstrated. It is conceivable, for example, that classes with low Pupil/Teacher Ratios also had other characteristics (e.g., better materials, a more structured program) that facilitated the children's development, and that the Pupil/Teacher Ratio itself had no direct influence on children's performance.

An example of an actual reversal in direction of a program variable's relationship with performance can be seen in the analysis for Teacher's Education (Table 89). For Urban children, a higher level of Teacher's Education was associated with higher gains (.05 level) in Total Non-Verbal Behavior; for Non-Urban children, by contrast, the two variables were negatively related (.01 level).

Up to this point, the results of the analyses have been organized primarily by program variable, and secondarily by subsetting variable. It may be equally meaningful to ask, for a particular type of child, what approach should be emphasized for that child. In the following paragraphs, different subgroups of children (as defined by three subsetting variables: pretest IQ, age, and urban/non-urban residence) are listed, and for each subgroup there is a brief summary description of the specific program features that were associated with the best performance on different measures for that subgroup. For convenience, these descriptions refer to "benefits" of particular program approaches, but as noted previously, causality can only be inferred from the statistical associations.

1. Pretest IQ--Low (Below 85)

These children generally benefited from greater class use of dramatic materials; less extensive use of large-muscle and small-muscle materials; greater class and teacher continuity; and teachers with lower levels of education.

2. Pretest IQ--Mid (85-95)

Beneficial program characteristics for this group included greater use of language materials, dramatic materials, and small-muscle materials; less use of large-muscle materials; and teachers with lower levels of education.

3. Pretest IQ--High (Over 95)

Program features found beneficial included greater use of dramatic materials; less use of large-muscle materials; and a low pupil/teacher ratio.

4. Age--Young (Under 60 months)

Children in this group benefited from higher continuity of teachers; teachers with lower levels of experience; a low pupil/teacher ratio; greater use of dramatic materials; and less use of large-muscle materials.

5. Age--Old (60 months or over)

This group was helped by lower class use of large-muscle materials; greater use of dramatic materials; and teachers with lower levels of education.

6. Urban Children

Conditions beneficial to this group were a low pupil/teacher ratio; greater use of dramatic materials and less use of large-muscle materials; and higher continuity of teachers.

7. Non-Urban Children

Beneficial program characteristics for this group included less use of large-muscle materials; teachers with lower education levels; and greater use of language and dramatic materials.

CHAPTER X

SUMMARY OF 1967-78 FINDINGS

The main research question which this study was designed to help answer is: *For a variety of different Head Start goals (cognitive growth, social-emotional development, and parent attitudes), what program characteristics or approaches were associated with the greatest gains for different kinds of children*? This general issue can be restated as a series of more specific questions, as follows:

- What were the sample children and their parents like at the time the children entered Head Start in 1967? Were they a fairly homogeneous group, or did they vary substantially on important personal, cognitive, social-emotional, and socio-economic dimensions?
- What were the Head Start programs like? Did they differ widely on various dimensions of resources and approaches, or were they interchangeable, for all practical purposes?
- What changes occurred in the sample children and their parents over the evaluation period?
- Were there differences in magnitude or direction of changes for different kinds of children?
- Were certain kinds of programs associated with greater child and parent gains than other kinds of programs?
- Did certain kinds of children make greater gains in certain kinds of programs?

Later sections of this chapter summarize and interpret the findings on each of the above questions. Before reviewing the results of the study, however, it is important to summarize briefly the sources of data on which the analyses were based. A few of the measures, such as the Stanford-Binet test of general intelligence, were standardized instruments for which general population norms have been developed. Most of the instruments, however, were developed for use with disadvantaged children, and several were created specifically for Head Start (e.g., the Social Interaction Observation Procedure); for these instruments, since there are no general-population norms, the primary interest is in how scores changed during the evaluation period, and in how they differed among groups of children, rather than in their absolute magnitude.

A. DATA COLLECTION INSTRUMENTS

The data collection instruments used in 1967-68 can be classified under three major headings:

- Instruments designed to record data on the background and performance of the Head Start children.
- Instruments pertaining to the children's parents and families.
- Instruments pertaining to the Head Start centers and classes.

1. Instruments Pertaining to Children

The only instrument used in 1967-68 to measure cognitive growth was the Stanford-Binet Intelligence Test. Scores on this instrument, which was administered pre and post, reflect a complex of skills and attitudes, including the child's willingness to cooperate with the examiner, his comprehension of the instructions and tasks, and his general level of intellectual achievement. Stanford-Binet performance has frequently been reported to predict performance in school situations.

Two instruments, the Inventory of Factors Affecting Test Performance and the Social Interaction Observation Procedure, were administered pre and post to provide information about the children's behavior in the social-emotional domain. After administering the Stanford-Binet to a child, the examiner filled in the Inventory of Factors Affecting Test Performance, based on his observations of the child in the test situation. This rating scale describes attitudinal and emotional factors that might have contributed to the child's Stanford-Binet performance; it also provides a measure of the child's ability to adjust to the test conditions.

In the Social Interaction Observation Procedure (SIOP), observers recorded in ten-second intervals the social interactions of individual children with peers and adults during free-play situations. The instrument was designed to help answer questions such as whether a child initiated social contacts or was simply a respondent, whether he participated more in interactions with peers or with adults, how much he interacted with peers of other ethnic groups than his own, etc.

2. Instrument Pertaining to Parents and Families

Pre and post data on the parents and families were collected on a Parent Interview form that was similar but not identical to the one used in 1968-69. This instrument provides three kinds of data: (1) demographic, such as the mother's age and education, (2) behavioral, such as the mother's participation in community activities, and items intended to provide an index of the child's emotional maturity at home, and (3) dynamic and process factors such as the mother's reported mode of control over the child, her aspirations and expectations for his development, and her attitudes of optimism, alienation, and hopelessness.

3. Instruments Pertaining to Programs

The Characteristics of Teaching Staff form contained information about the Head Start teachers and aides, their personal characteristics (sex, age, ethnicity, etc.), their level of education, any special training they received in preparation for their Head Start duties, and type and amount of prior teaching experience. Another form, Description of Center and Classroom Composition, provided information about the number of children and staff members in each classroom, the number of square feet of indoor and outdoor facilities, and the ethnic, sex, and age distributions of children in the classes.

The Observation of Substantive Curricular Input (OSCI) was used to collect more dynamic and interactive data about the actual classroom activities. This instrument, developed by UCLA, is a time-sampling observation designed to provide information on such questions as: What proportion of time is spend in free play? In activities developing small-muscle skills? In small groups? The 1967-68 OSCI differed from the 1968-69 version in that there were no measures looking specifically at the teacher; i.e., the focus for all of the 1967-68 observations was on what the children themselves were doing, regardless of whether a teacher was interacting with them or directing them.

B. MAJOR FINDINGS

1. Entry Characteristics of Children and Parents

As in the 1968-69 analysis, the entering children in 1967-68 showed considerable diversity on a number of dimensions, both in terms of personal characteristics and background, and in their entry performance on various measures. As compared with 1968-69, there was a smaller proportion of black children (49.81% against 68.17% in 1968-69), a smaller percentage of children from the South (23.72% against 77.28%), and a much smaller percentage of children from urban areas (45.13% against 77.28%). Most enrollees (85.43%) had had no Head Start experience prior to the evaluation period, and judging from the low frequency with which adults read to them in their homes (once or twice a week, on the average), most of the children had received little intellectual stimulation in their home environments. There was no clear trend showing overall superiority for entering children who had attended summer Head Start programs prior to the evaluation period.

Only one of the performance measures (the Stanford-Binet) has national norms for the general population, and only two instruments (Stanford-Binet and Inventory of Factors Affecting Test Performance) were exactly comparable to measures used in 1968-69. On the Stanford-Binet, the pretest mean in 1967-68 was slightly higher than in 1968-69 (91.42 compared with 89.04), but still appreciably below the national norm of 100. On the Inventory of Factors Affecting Test Performance, the entering children in 1967-68 had a mean of 56.72, compared with a mean in 1968-69 of 59.45.

Most of the sample parents had little education background; only about a third of the mothers, and a similar proportion of the fathers on whom data could be collected, had completed high school. A third of the mothers and over four-fifths of the fathers on whom data were available had jobs, but most of the working parents of both sexes were employed at an unskilled or semi-skilled level.

In about three-fifths of the sample families, the adults living with the Head Start child consisted of the mother plus the father or another man. The second most frequent family structure (approximately one-fifth of the total sample) included only one adult, the mother.

Almost all sample parents indicated that they would like to send other children to Head Start in the future, indicating an initially positive attitude toward the program. However, they indicated little expectation that they themselves would receive substantial benefit from the program, aside from the possible benefit to their children.

Most parents had high aspirations for their children's educational attainments (half hoped their children would complete college), but little real expectation that they would achieve those goals (fewer than a fourth expected their children even to enter college). The typical parent had moderately positive attitudes about the value and importance of education to success and happiness in life.

2. Characteristics of the Programs

Over three-fourths of the children (78.96%) were in sites whose delegate agencies were Community Action Programs or similar local welfare groups. Virtually all of the classes met five days a week, and most met for three to four hours each day. Class size varied somewhat, but over three-fourths of the children were in classes of from 14 to 18 children. Pupil/teacher ratio ranged from 3/1 to almost 18/1 with the most typical values being from 5/1 to 9/1. Most children had the same head teacher over the entire evaluation period, but in about a sixth of the classes there was at least one change of head teacher.

The typical class had at least one teacher who was quite highly educated. Almost nine-tenths of the sample children had a teacher with additional education beyond high school, and over a third had teachers who had gone to graduate school.

Most teachers were also quite experienced; almost two-fifths of the children had teachers with from three-and-a-half to six years of experience with disadvantaged children. (This figure includes experience with Head Start, with other preschool children, and with older disadvantaged children.) There was wide variation in amount of prior experience, with values ranging from 9 months to 135 months.

There was considerable variability among classes in the relative frequency of use of different types of classroom materials, as recorded on the OSCI by independent observers. Overall, the most commonly applied types of materials were art materials and materials for use in dramatic role-playing and play-acting (e.g., puppets, story records). There was also fairly frequent use of materials designed to exercise the children's large muscles (e.g., swings, balls), and small muscles (e.g., puzzles, string-beads). Language-oriented materials (e.g., story-book records, books) were less often used, and there was very little use of science materials (e.g., magnets, aquaria) or music materials (e.g.,musical instruments).

Data from an earlier study of the 1967-68 OSCI records indicate than caretaking (e.g., clean-up, toileting) and fighting were infrequent, as were activities providing specific training for auditory discrimination, quantitative development, and scientific activities. More frequently observed activities included dramatic role-playing and informal language development.

3. Gains Associated with Head Start Participation

Table 107 shows comparisons of pretest and posttest performance on each measure for all sample children having both pretest and posttest scores. The column at the far left lists the child and parent measures. Other columns, from left to right, show the sample sizes, the means of the pretest scores, the means of

Table 107

PRETEST-POSTTEST PERFORMANCE CHANGES (1966-67)

Dependent Variable	N	Pretest Mean	Posttest Mean	Mean Change	t
Stanford-Binet	1508	91.50	96.08	4.58	18.16**
Factors Affecting Test Performance	1474	56.84	60.15	3.31	10.53**
SIOP: Total Verbal Behavior	1507	39.53	44.29	4.76	6.91**
SIOP: Total Non-Verbal Behavior	1505	12.94	13.09	0.15	0.38
SIOP: Total Inappropriate Behavior	1032	1.28	1.33	0.05	0.31
SIOP: Initiations by Subject to Peers of Same Ethnic Group	1281	12.94	13.43	0.49	1.86
SIOP: Initiations by Subject to Peers of Other Ethnic Group	1177	3.99	4.69	0.70	4.59**
Perceived Effect of Head Start on Child	1388	3.46	3.68	0.22	4.22**
Educational Aspirations for Child	1385	7.04	6.99	-0.05	-1.39
Educational Expectations for Child	1383	5.21	5.07	-0.14	-2.81**
Value of Education	1401	51.24	51.86	0.62	1.36

**Difference significant at .01 level

the posttest scores, the mean gain scores, and the t-ratios of the gain scores. A double asterisk (**) after a t-ratio indicates that the gain (or loss) was significant at the .01 level.

The children's mean gain on the Stanford-Binet was 4.58, which is almost exactly the same as in 1968-69. Though relatively small in magnitude, the gain was statistically significant, and showed that the Head Start children were experiencing growth in the cognitive domain.

The results in the social-emotional domain were also quite positive. Children improved significantly in adaptiveness to the Stanford-Binet test conditions; in frequency of verbal activity; and in taking the initiative in social interactions with children of other ethnic groups. These findings indicate valuable progress toward socially oriented program goals.

There was a significant improvement in the parents' attitudes regarding the perceived benefits of Head Start for their children; at the same time, however, the parents' educational expectations for their children decreased. Overall, there was no consistent pattern of improvement in the parents' feeling of optimism for their children, nor did the parents feel that they personally would derive appreciable benefits from their children's exposure to Head Start.

All of the above findings must be interpreted with caution, because of the lack of non-Head Start control groups. An association has been demonstrated between Head Start participation and gains on a number of important performance measures, but no causal relationship has been proven.

There were sizable variations in the magnitude of the gains on most performance measures. On the Stanford-Binet, for example, though the mean gain was 4.58, approximately 14% of the children gained 15 points or better. The major function of the remainder of the analyses was to determine how much of the variation on the various measures might be accounted for by: (1) characteristics of the children themselves, (2) features of the programs that they attended, and/or (3) interactions between the child and the program characteristics.

4. Differences in Gains for Different Groups of Children

Six variables were used to define subgroups of children, so that comparisons could be made for the subgroups. The variables were (1) child's age, (2) child's sex, (3) child's pretest IQ, (4) urban vs. non-urban residence, (5) Southern vs. non-Southern residence, and (6) interval between children's enrollment and pretest administration of the Stanford-Binet.

As in 1968-69, the children's age and sex showed little relationship to their performance gain. Non-urban children made significantly larger gains than urban children in the number of social interactions that they initiated with peers of the same ethnic group and of other ethnic groups. Non-Southern children made larger gains than Southern children in frequency of verbal social interactions with peers and adults, and in their initiations of social interactions with children of the same and other ethnic groups.

As shown in Table 108, the children's pretest IQ's were significantly related to their gains on the Stanford-Binet and on two social-emotional measures: the Inventory of Factors Affecting Test Performance, and the number of inappropriate social behaviors.

On the Stanford-Binet, the Low initial IQ (below 85) group gained significantly more (.01 level) than the Mid (85-95) IQ group, which in turn gained more (.01 level) than the High (above 95) IQ group. This agrees with the trend found in the 1968-69 data. Also, as in the 1968-69 analysis, the absolute magnitude of the differences is substantial. The Low initial IQ children gained, on the average, over seven IQ points more than the High IQ group.

The results suggest that, in the cognitive domain, at least, children with lower initial ability benefited more from Head Start than those with higher initial ability. In the social-emotional domain, the results are less clear-cut, with the results on the SIOP: Total Inappropriate Behavior somewhat contradicting those on the Inventory of Factors Affecting Test Performance.

Table 108

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH CHILD'S PRETEST IQ

	LOW IQ (BELOW 85)				MID IQ (85-95)				HIGH IQ (OVER 95)						
DEPENDENT VARIABLE	N	PRE MEAN	POST MEAN	MEAN GAIN	N	PRE MEAN	POST MEAN	MEAN GAIN	N	PRE MEAN	POST MEAN	MEAN GAIN	DIFF.IN GAIN LOW-MID IQ	DIFF.IN GAIN LOW-HIGH IQ	DIFF.IN GAIN MID-HIGH IQ
Stanford-Binet	393	74.96	83.63	8.67	502	89.16	94.61	5.45	613	104.01	105.26	1.25	3.22**	7.42**	4.20**
Factors Affecting Test Performance	386	51.77	56.98	5.21	477	56.60	60.08	3.48	587	60.87	62.64	1.77	1.73	3.44**	1.71
SIOP: Total Verbal Behavior	370	34.97	39.49	4.52	461	39.57	43.85	4.28	586	43.93	49.12	5.19	0.24	-0.67	-0.91
SIOP: Total Non-Verbal Behavior	374	15.39	13.71	-1.68	459	13.05	13.20	0.15	578	12.00	12.25	0.25	-1.83	-1.93	-0.10
SIOP: Total Inappropriate Behavior	274	1.04	1.77	0.73	315	1.51	1.27	-0.24	368	1.45	1.20	-0.25	0.97*	0.98*	0.01
SIOP: Initiations by Subject to Peers of Same Ethnic Group	327	11.87	12.75	0.88	398	13.67	13.25	-0.42	489	13.51	14.12	0.61	1.30	0.27	-1.03
SIOP: Initiations by Subject to Peers of Other Ethnic Group	301	3.58	4.13	0.55	363	4.22	4.52	0.30	437	4.20	5.20	1.00	0.25	-0.45	-0.70

** Difference significant at .01 level

* Difference significant at .05 level

To study the relationship between pretest weeks and pretest-posttest performance gains, separate analyses were performed for three groups of children: a Low Weeks group whose interval between enrollment and Stanford-Binet pretest was one to two weeks; a Mid Weeks group whose interval was three to six weeks; and a High Weeks group whose interval was over six weeks. Although there were significant differences in gains for the three groups, no systematic pattern was apparent in the direction of the differences. For example, children who received their pretest more quickly did not consistently make larger gains across the different measures. This finding may be related to the fact that there also was no systematic pattern in the direction of differences in the pretest scores.

5. Differences in Gains with Different Program Approaches

A series of one-way analyses of variance was performed on several program variables to determine whether there were significant differences in performance for different program characteristics and approaches. Instead of using "raw" pre-post difference scores as the measure of gain, the posttest scores on each measure were adjusted by regression techniques for differences in pretest scores. This provided "residualized" performance measures that took into account the fact that some children started with high scores than other children. Before the analyses of variance could be performed, however, it was necessary to select a manageable number of program variables from the large quantities of program-description data that were available. To do this, a method of correlational analysis was used as a preliminary screening technique. Correlations were first computed between each of the program-description variables, and the pretest scores on each performance measure; then correlations were computed with the posttest scores on each performance measure. The difference between the pretest correlation and the posttest correlation for each combination of program variable and performance measure was tested for statistical significance. Where there was a significant change in correlation (i.e., where the posttest correlation was significantly different than the pretest correlation), this was interpreted as strongly suggestive that the program variable in question had affected the children's gains on the particular performance measure.

From the correlational analyses, a number of apparently influential program variables were identified. To these were added several other variables that did not appear so potent in the correlational analyses, but that were of particular theoretical or practical interest. The result was that nine program variables were selected for further study by analysis of variance. Each of these variables is described below, and the results of the analysis of variance for that variable are discussed.

Language Materials. This analysis addressed the question of whether a higher frequency of classroom use of language-related materials was associated with superior performance by the children. The split on this variable, which was derived from the Observation of Substantive Curricular Input (OSCI), divided children into two groups; one group consisted of children in classes where language materials were in use during at least 5% of the classroom observation periods, and the other contained children in classes where language materials were less frequently used.

Table 109 shows that use of language materials was positively related (.01 level of significance) to Stanford-Binet performance, as well as to the children's overall level of non-verbal social interactions (.05 level). The finding on the Stanford-Binet appears to contradict some of the data reported for the 1968-69 study, in which a program variable related to the teachers' self-reported emphasis on language activities was negatively related to Stanford-Binet performance. The probable explanation for the apparent disagreement is that the program variables for the two years were in fact measuring different things. The 1967-68 data were based on independent time-sampled observations of what actually accurred in the classroom. By contrast, the 1968-69 data were based on the teacher's reports; these reports may have reflected what the teachers thought they were required to do, rather than what they actually did. From this perspective, the 1967-68 data would seem to provide a truer picture of the relationships between language activities and children's performance, and suggest that future Head Start programs might beneficially emphasize language skills and extensive use of language materials.

Table 109

RESULTS OF ANALYSES OF VARIANCE ON
OSCI: LANGUAGE MATERIALS

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	95.63	9.34	96.90	9.11	1449	6.87**
Factors Affecting Test Performance	60.25	8.19	60.86	8.52	1415	1.68
SIOP: Total Verbal Behavior	44.45	22.87	43.31	21.23	1471	0.99
SIOP: Total Non-Verbal Behavior	12.61	11.76	13.85	12.12	1468	3.93*

M_1 = Mean for low level of language materials

M_2 = Mean for high level of language materials

**F significant at .01 level

*F significant at .05 level

Dramatic Materials. Some teachers make extensive use of dramatic play activities involving role-playing, use of puppets, story records, etc., both to entertain and motivate the children and to exercise their verbal skills. Do these materials and activities actually benefit the children's development? To examine this question, a High Dramatic Materials Group and a Low Dramatic Materials Group were compared in performance. The High Dramatic Materials group consisted of children in classes that used dramatic-play materials during at least 13% of the observation periods; Low Dramatic Materials children were those in classes that used such materials less frequently.

As Table 110 shows, the High Dramatic Materials group showed superior gains (.01 level) on two social-emotional measures: frequency of verbal social interactions with adults and peers; and degree of beneficial effects of Head Start on the children, as judged by their parents. Both findings seem logical. Most of the children's activities included in this program variable had a large verbal component, and would have given the children practice in communicating with others. Also, many of the Parent Interview items used to define the "Perceived Effect of Head Start" variable were related to the childrens' ability and willingness to converse with others, and to their self-confidence. These abilities might logically have been strengthened by the children's involvement in dramatic activities. Although there is no direct evidence that the greater use of dramatic materials had a causal effect in improving performance on the two measures, the results certainly suggest that dramatic-play activities may be a useful technique for enhancing the children's communication skills.

Teacher's Education. To study the relationship between children's performance and teachers' level of education, two groups of children were defined: the High Teacher Education group includes children whose most highly educated teacher had 15 to 16 years of education (most had a college degree), and the Low Teacher Education group consists of children whose most highly educated teacher had less than 15 years of education. The results are shown in Table 111.

On the Stanford-Binet and on three social-emotional measures, children in the Low Teacher Education group made significantly larger gains. This finding is

Table 110

RESULTS OF ANALYSES OF VARIANCE ON

OSCI: DRAMATIC MATERIALS

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
SIOP: Total Verbal Behavior	41.92	21.82	46.54	21.96	1471	16.43**
Perceived Effect of Head Start on Child	3.53	1.78	3.82	1.73	1350	9.31**

M_1 = Mean for low level of dramatic materials

M_2 = Mean for high level of dramatic materials

**F significant at .01 level

Table 111

RESULTS OF ANALYSES OF VARIANCE ON TEACHER'S EDUCATION

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	97.64	8.35	96.50	8.92	1149	3.98*
Factors Affecting Test Performance	61.36	7.44	59.60	9.58	1114	8.64**
SIOP: Total Verbal Behavior	44.83	23.88	41.17	22.33	1138	5.70*
SIOP: Total Non-Verbal Behavior	14.37	11.75	13.07	11.29	1135	2.86
SIOP: Initiations by Subject to Peers of Same Ethnic Group	14.38	8.37	12.94	7.66	958	6.54**

M_1 = Mean for low level of teacher education

M_2 = Mean for high level of teacher education

**F significant at .01 level

*F significant at .05 level

consistent with results reported earlier for the 1968-69 data (TM-4862/000). One possible explanation for this finding is that, in some way, the more highly educated teachers had acquired teaching habits or speech patterns that made it difficult for them to communicate effectively with young disadvantaged children. This possibility is discussed at some length in the report for 1968-69. There are alternative explanations, however, related to the possibility that the apparent effects of teacher education are actually artifacts of other differences in the teachers, in the composition of the classes, in the resources available to the teachers, etc. Section 6, below, discusses further analyses performed to separate out two possible sources of variance that might have been confounded with the Teacher Education variable; these are the children's initial IQ level, and their geographic area of residence (South/Non-South).

Teacher's Experience with Disadvantaged Children. In the 1968-69 analyses, a negative relationship was found between the children's performance and the teachers' length of paid experience with disadvantaged preschool children. In the 1967-68 analyses, two groups of children were defined for the purpose of providing a similar comparison. One group consists of children in classes whose average teacher had approximately 60 months or more of experience; this figure includes experience with Head Start children and with other disadvantaged children. The second group includes children whose teachers had, on the average, under 60 months of experience.

Table 112 shows that, as in 1968-69, children with less experienced teachers made larger gains on several measures. In 1967-68, however, these differences were limited to the social-emotional domain. Children with less experienced teachers made larger gains on the Inventory of Factors Affecting Test Performance (.05 level), and in the number of initiations of social interactions with peers of other ethnic groups (.01 level); in addition, the parents of children in that group had higher educational aspirations for them (.05 level).

Table 112

RESULTS OF ANALYSES OF VARIANCE ON

TEACHER'S EXPERIENCE WITH DISADVANTAGED CHILDREN

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	97.70	8.86	98.38	8.71	1149	1.74
Factors Affecting Test Performance	60.90	8.52	59.59	9.32	1114	5.91*
SIOP: Initiations by Subject to Peers of Same Ethnic Group	13.78	7.67	12.94	7.97	958	2.74
SIOP: Initiations by Subject to Peers of Other Ethnic Group	5.40	5.24	4.34	3.97	863	11.22**
Educational Aspirations for Child	6.98	1.21	6.83	1.82	1063	4.07*

M_1 = Mean for low level of esperience

M_2 = Mean for high level of experience

**F significant at .01 level

* significant at .05 level

As with the teacher education variable, it is possible that the apparent effects of Teacher's Experience with Disadvantaged Children are artifacts of other differences in the children or the programs. This alternative explanation is further considered in Section 6, below.

Large-Muscle Materials. The analyses for 1968-69 showed strong positive relationships between children's performance on several measures, and amount of large-muscle equipment seen in the classrooms. In the 1967-68 data there was no directly comparable program variable, but a somewhat similar variable was derived from the OSCI data. The major difference is that in 1968-69, all equipment-oriented program variables represented the amount and quality of equipment in the classrooms, whether or not that equipment was in use; by contrast, the 1967-68 equipment-oriented variables designate the actual frequency of classroom use of the different types of material, as recorded on the OSCI forms.

Table 113 shows the performance of two groups of children. One group consists of children in classes where large-muscle materials (swings, balls, etc.) were seen in use during at least 10% of the observation periods. The other group includes children in classes where such materials were in use for less than 10% of the observation periods. The results do not confirm the findings reported for the 1968-69 data. *In 1967-68, use of large-muscle materials was negatively associated (.01 level) with performance on the Stanford-Binet; with the number of initiations of social interactions with peers of the same ethnic group; and with the Head Start benefits to the children, as perceived by the parents*.

Possibly the difference in findings on the Stanford-Binet for the two years stems from the fact that in 1967-68 the program variable showed availability of the materials, while in 1967-68 it showed actual use. In 1967-68, a class that made extensive use of play equipment such as balls and swings may have devoted less time to cognitively oriented activities, and this may have hampered the types of cognitive development measured by the Stanford-Binet.

Table 113

RESULTS OF ANALYSES OF VARIANCE ON

OSCI: LARGE-MUSCLE MATERIALS

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	97.68	9.19	95.83	9.22	1449	14.51**
Factors Affecting Test Performance	61.24	8.65	60.39	9.02	1415	3.28
SIOP: Initiations by Subject to Peers of Same Ethnic Group	14.14	7.59	12.75	7.77	1248	10.11**
Perceived Effect of Head Start on Child	4.00	1.72	3.58	1.77	1350	19.64**

M_1 = Mean for low level of large-muscle materials

**F significant at .01 level

M_2 = Mean for high level of large-muscle materials

Pupil/Teacher Ratio. Did children make larger gains in classes with fewer children per teacher? Comparisons were made on several performance variables for two groups of children; one group consisted of children in classes with up to 7.5 children per teacher, and the other group included all children in classes with more than 7.5 children per teacher.

As Table 114 shows, pupil/teacher ratio was not significantly related to gains on the Stanford-Binet, but was related to performance on two social-emotional measures. *Children in classes with fewer than 7.5 children per teacher made significantly larger gains (.01 level) on the Inventory of Factors Affecting Test Performance, and in their number of initiations of social interactions with peers of the same ethnic group*. A possible explanation is that, in classes with lower pupil/teacher ratios, the teachers were able to work more with small groups of children, and to direct those children into activities that maximized inter-personal relationships. Such small-group activities might have increased the children's level of social initiative and enabled them to adapt more readily to new social situations.

OSCI: Small-Muscle Materials. This analysis examined the relationships between children's performance and level of classroom use of small-muscle materials (e.g., puzzles and string-beads). Two groups were compared, one consisting of children in classes where small-muscle materials were in use during at least 10% of the observation periods, and the other containing children in classes where such materials were used in less than 10% of the observation periods. The results are presented in Table 115.

The level of use of small-muscle materials was positively associated (.01 level) with the frequency of the children's initiations of social interactions with peers of other ethnic groups, but negatively associated with the amount of verbal social interactions of the children with peers and adults. A closer analysis suggests that the findings are not necessarily incompatible. One variable (SIOP: Total Verbal Behavior) is restricted to verbal behavior; it

Table 114

RESULTS OF ANALYSES OF VARIANCE ON PUPIL/TEACHER RATIO

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	97.51	8.97	97.03	8.48	1137	0.77
Factors Affecting Test Performance	60.37	8.44	58.49	9.79	1102	11.26**
SIOP: Total Verbal Behavior	43.47	21.43	45.60	24.28	1124	2.35
SIOP: Initiations by Subject to Peers of Same Ethnic Group	13.83	7.76	12.32	7.99	947	8.11**
SIOP: Initiations by Subject to Peers of Other Ethnic Group	4.49	4.99	4.22	4.14	849	0.65

M_1 = Mean for low pupil/teacher ratio

**F significant at .01 level

M_2 = Mean for high pupil/teacher ratio

Table 115

RESULTS OF ANALYSES OF VARIANCE ON

OSCI: SMALL-MUSCLE MATERIALS

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	96.42	9.30	96.58	9.20	1449	0.11
Factors Affecting Test Performance	60.83	8.68	61.21	9.00	1415	0.65
SIOP: Total Verbal Behavior	46.96	22.89	41.35	20.80	1471	24.26**
SIOP: Total Non-Verbal Behavior	12.47	11.32	13.59	12.51	1468	3.21
SIOP: Initiations by Subject to Peers of Other Ethnic Group	4.26	4.45	5.34	5.48	1144	13.47**
Perceived Effect of Head Start on Child	3.57	1.65	3.42	1.85	1350	2.52

M_1 = Mean for low level of small-muscle materials

M_2 = Mean for high level of small-muscle materials

**F significant at .01 level

is possible that when the children were using puzzles, string-beads, and other such materials, they had fewer occasions in which to converse with their teachers or with other children. The other dependent variable (SIOP: Initiations by Subject to Peers of Other Ethnic Group) could include non-verbal as well as verbal interactions; the non-verbal interactions may have been facilitated rather than impeded by the children's use of the small-muscle materials. For example, children may have worked together on puzzles, etc., in a manner that made it easier and more natural to interact with children of other ethnic groups.

Class Transiency. Some classes had fairly stable compositions, with most of the children who started the evaluation period still being with the same classes at the end of that period. In other classes there was a high transiency rate. To explore the relationship between transiency and performance, two groups of children were defined. The High Transiency group consists of children in classes where between 0% and 74% of the children in those classes at posttest time were the same as those in the classes at pretest time. The Low Transiency group consists of children with 75% to 100% overlap in pretest-posttest composition. Table 116 shows that Class Transiency was significantly related to six performance variables. On three variables the Low Transiency group made significantly larger gains, and on the other three variables the High Transiency group gained more.

A possible explanation for the superiority of the Low Transiency group on the Stanford-Binet is that cognitively oriented instruction was able to proceed in a more orderly and consistent fashion in classes of stable composition, than in classes where children were frequently leaving or new children arriving. Similarly, in a classroom of stable composition, the children would have a longer sustained period in which to get to know each other, to become friends, and to interact socially; this could explain why the Low Transiency group made larger gains in number of initiations of social interactions with peers of the same ethnic group and of other ethnic groups.

Table 116

RESULTS OF ANALYSES OF VARIANCE ON CLASS TRANSIENCY

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	97.14	8.77	94.85	9.93	1441	19.60**
Factors Affecting Test Perform.	60.05	9.02	61.30	7.90	1402	6.48*
SIOP: Total Verbal Behavior	44.63	22.77	42.28	21.20	1445	3.41
SIOP: Initiations by Subject to Peers of Same Ethnic Group	13.70	7.87	12.72	7.12	1227	4.27*
SIOP: Initiations by Subject to Peers of Other Ethnic Group	5.04	5.10	4.01	4.69	1132	10.13**
Perceived Effect of Head Start on Child	3.55	1.72	3.92	1.82	1330	12.34**
Educational Aspirations for Child	6.85	1.24	7.13	1.24	1333	14.11**

M_1 = Mean for low transiency

M_2 = Mean for high transiency

**F significant at .01 level

*F significant at .C5 level

The High Transiency group showed superior gains on the Inventory of Factors Affecting Test Performance, a measure that reflects the child's ability to adapt to a fairly novel situation involving the Stanford-Binet examiner and the instrument itself. It appears that a class with a high transiency rate, the child may have become more accustomed to seeing new faces, and thus was less intimidated by the Stanford-Binet examiner.

The parents of children in the High Transiency group perceived greater gains for their children in Head Start, and had higher aspirations for their children's educational futures. One possible explanation for this finding is related to the specific questions asked in the Parent Interview. That instrument asks whether the parent feels her child speaks better, is more self-confident, gets along better with older children, is better able to do things on his own, and is interested in new things. These questions seem to be addressed largely to the child's adaptiveness to new people and situations; such adaptiveness might be enhanced by greater mobility of other children into and out of the classroom.

Teacher Continuity. Head Start classes varied in staff stability as well as in transiency rate among children. To explore the possible relationship of this variable with performance, children were divided into a High Teacher Continuity group and a Low Teacher Continuity group. The High Teacher Continuity group consists of children who had the same head teacher over the entire evaluation period; the Low Teacher Continuity group consists of children whose head teacher changed at least once during that period.

Only the Inventory of Factors Affecting Test Performance was found significantly related to Teacher Continuity (although there was a suggestive difference of one IQ point on the Stanford-Binet, in favor of the High Teacher Continuity group). As Table 117 shows, in classes whose head teacher did not change, the children made significantly greater gains (.01 level) on the Inventory of Factors Affecting Test Performance. Possibly the changes in head teacher were perceived by children in the Low Teacher Continuity group as unsettling and anxiety-producing; this may have made them appear less poised in the test situation.

Table 117

RESULTS OF ANALYSES OF VARIANCE ON

TEACHER CONTINUITY

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	95.87	8.86	96.84	9.30	1441	2.22
Factors Affecting Test Performance	58.27	9.52	60.06	8.57	1404	7.75**

M_1 = Mean for low level of continuity **F significant at .01 level

M_2 = Mean for high level of continuity

In summary, the overall findings regarding children's performance in different types of programs indicate that a number of program variables were significantly associated with gains on a variety of performance measures. As in the 1968-69 study, however, a particular program variable typically had positive relationships with only a limited subset of the performance measures, and either no associations or even negative relationships with other measures. The results appear to support the recommendation made in the report on the 1968-69 data (TM-4862/000), that each Head Start child should be exposed to a carefully planned variety of teaching procedures and approaches, with each learning experience designed by the teacher to achieve a specific, well-defined goal.

6. Interactions Between Child and Program Variables

To study the relationships between program variables, child subgrouping variables, and performance, one-way analyses of variance were performed for different subsets of children; this method provided independent measures of the association between program variables and performance for children of different age levels, different pretest IQ's and urban vs. non-urban residency. In addition, for two program variables (Teacher's Education and Teacher's Experience with Disadvantaged Children), separate analyses were performed for Southern and Non-Southern children. General trends in the results of the analyses are summarized below. As in the 1968-69 data, there were interaction effects between program variables and child-description variables. That is, a program approach that was associated with superior performance for one group of children was not necessarily superior for another group.

In a few cases, subsetting of the data had the effect of washing out certain significant relationships that had been found in the analyses of the total sample. For example, the total-sample analysis showed a significant negative association (.05 level) between Teacher's Education and children's Stanford-Binet gains. However, when the data were subset by Southern vs. non-Southern residence, neither subgroup showed that relationship with Stanford-Binet performance. Such a result may indicate that, in the total-sample analysis, the subsetting variable (e.g., South/non-South Residence) was confounded with the program variable (e.g., Teacher's Education). This could have produced a spurious relationship which would have been eliminated when the data were subset. It should be noted, however, that subsetting also had the effect of reducing sample sizes; this, in itself, could have brought marginally significant relationships to a point that failed to reach the .05 level of significance.

In several other instances, subsetting of the data revealed significant relationships that were obscured in the total-sample analyses. For example, in the total-sample analysis for Small-Muscle Materials, no significant relationship was found with the children's performance on the Inventory of Factors Affecting Test Performance (FATP). Such a relationship did appear, however, for the Urban subgroup; for that group, level of class use of small-muscle materials was positively associated with gains on the FATP.

There were numerous situations in which a significant relationship was found between a program variable and a performance measure for a particular subgroup, but not for other subgroups defined by that same subsetting variable. For example, in the Young subgroup, a higher Pupil/Teacher Ratio was associated with significantly poorer gains on the Inventory of Factors Affecting Test Performance, and on the children's Initiations by Subject to Peers of Same Ethnic Group. A possible interpretation is that the types of small-group interactions made possible by a low Pupil/Teacher Ratio were important for certain dimensions of social-emotional development in the younger children, whereas the older children had already developed more stable social-emotional patterns that were less influenced by the classroom environment. However, caution must be taken in interpreting this finding (as well as other findings discussed in this summary), since only an association of variables, not a cause-and-effect relationship, has been demonstrated. It is conceivable, for example, that classes with low Pupil/Teacher Ratios also had other characteristics (e.g., better materials, a more structured program) that facilitated the children's development, and that the Pupil/Teacher Ratio itself had no direct influence on children's performance.

An example of an actual reversal in direction of a program variable's relationship with performance can be seen in the analysis for Teacher's Education (Table 111). For Urban children, a higher level of Teacher's Education was associated with higher gains (.05 level) in Total Non-Verbal Behavior; for Non-Urban children, by contrast, the two variables were negatively related (.01 level).

Up to this point, the results of the analyses have been organized primarily by program variable, and secondarily by subsetting variable. It may be equally meaningful to ask, for a particular type of child, what approach should be emphasized for that child. In the following paragraphs, different subgroups of children (as defined by three subsetting variables: pretest IQ, age, and urban/non-urban residence) are listed, and for each subgroup there is a brief summary description of the specific program features that were associated with the best performance on different measures for the subgroup. For convenience, these descriptions refer to "benefits" of particular program approaches, but as noted previously, causality can only be inferred from the statistical associations.

Pretest IQ--Low (Below 85). These children generally benefited from greater class use of dramatic materials; less extensive use of large-muscle and small-muscle materials; greater class and teacher continuity; and teachers with lower levels of education.

Pretest IQ--Mid (85-95). Beneficial program characteristics for this group included greater use of language materials, dramatic materials, and small-muscle materials; less use of large-muscle materials; and teachers with lower levels of education.

Pretest IQ--High (Over 95). Program features found beneficial included greater use of dramatic materials; less use of large-muscle materials; and a low pupil/teacher ratio.

Age--Young (Under 60 months). Children in this group benefited from higher continuity of teachers; teachers with lower levels of experience; a low pupil/teacher ratio; greater use of dramatic materials; and less use of large-muscle materials.

Age--Old (60 months or over). This group was helped by lower class use of large-muscle materials; greater use of dramatic materials; and teachers with lower levels of education.

Urban Children. Conditions beneficial to this group were a low pupil/teacher ratio; greater use of dramatic materials; and teachers with lower education levels; and greater use of language and dramatic materials.

What can be inferred from the interaction effects found between program variables and child-description variables? The results tend to support the recommendation made in the report on the 1968-69 data (TM-4862/000):

> "Although causality cannot be directly demonstrated from these relationships, it appears that the teachers' classroom procedures and the areas of program emphasis should be tailored somewhat to the children's characteristics, as well as to the specific program goals."

It was further suggested in TM-4862/000 that the tailoring of program approaches to different goals and different types of children might be fostered by carefully structuring the division of effort between professional teachers and volunteer or paraprofessional aides. The aides might free the teachers from routine drillwork and exercises so that the more highly trained teachers could focus more of their efforts on meeting individual child needs. Finally, it was recommended that all Head Start teachers be given more intensive training in how to make the best use of aides so as to maximize total classroom effectiveness. These recommendations still appear appropriate in the light of the 1967-68 data.

CHAPTER XI

ANALYSIS OF NATIONAL EVALUATION DATA FOR 1966-67

The first Head Start full-year programs were implemented in 1966-67. As with any large-scale social-action program created under severe time constraints, the Head Start effort experienced many difficulties and delays in its initial months; these operational problems have strong implications for the evaluation design, and mean that special care must be taken in interpreting the 1966-67 data.

In addition to the design constraints previously described for the 1967-68 and 1968-69 evaluations (e.g., lack of non-Head Start control group, and non-random assignment to treatments), the major sources of uncontrolled variation in the 1966-67 design were the large differences in the date when different centers first began classroom operation, when they first tested the children, and when they administered the posttests. Some Head Start sites had started operations by September 1966, yet about half the sites had not begun classes by January 1967. Some classes began initial testing within one or two weeks after they opened, while others delayed pretesting for several months. The interval between pretesting and posttesting also varied widely, from a few days to over eight months, with an average interval of around 18 weeks.

Adding to the difficulty of the evaluation design is the fact that no precise data are available regarding the interval between class opening and pretest administration. Most E & R Centers recorded the interval between the opening of the Center, and the initial testing. This interval is not necessarily an accurate reflection of the amount of time that any particular class had been operating when the pretests were administered. Furthermore, some E & R Centers interpreted the pretest interval to mean the interval from the time of the first grant to the Center, rather than from the time of initial operation during the 1966-67 full-year program. Thus the available records do not provide unequivocal data on the pretest interval. A further complication is the fact that pretest interval was confounded with E & R Center, and thus with associated factors such as geographic region, urban/non-urban residence, etc. These design limitations mean that the 1966-67 analyses, even more than those for 1967-68 and 1968-69, must be regarded as exploratory, hypothesis-generating efforts rather than as rigorous tests of hypotheses in the tradition of classical control-group experiments.

Pretest-posttest interval was obtained by subtracting weeks of Center operation at time of initial test from weeks of operation at time of final test. Thus, even though the recorded date of initial Center operation may be suspect, the pretest-posttest interval should be reasonably reliable, since the same initial anchor point was used to calculate both the pretest interval and the posttest interval.

As in 1967-68 and 1968-69, the sample sites and classes were not randomly selected from the total Head Start population; rather, E & R Center Directors were requested to select sites which were, in the Directors' opinions, "representative of important subpopulations and of Centers whose programs are interesting from educational, research, or other points of view."

A. MEASURES

The 1966-67 evaluation used two instruments intended to measure the children's cognitive development: the Stanford - Binet and the Preschool Inventory. Each was administered at the beginning and again at the end of the evaluation period. The Stanford - Binet version used that year was the Wright adaptation, which meant that only four items were presented at each age level. The Preschool Inventory was the long form; it had 90 items compared with only 64 items in the 1968-69 version.

The only instrument related to the children's social/emotional behavior was the Behavior Inventory, a 50-item, four-point rating scale used by the teacher to describe each child's sociability, independence, curiosity, persistence, emotionality, self-confidence, jealousy, achievement, and leadership. The Behavior Inventory was administered twice to assess changes in affective behavior over the evalution period.

A Parent Interview instrument was used to obtain data related to family structure, to the occupational and income characteristics of the mothers and fathers, and to the educational background of the parents or guardians of the Head Start child.

Background characteristics and classroom activities of the teachers were assessed by a Staff Member Information Form and an Observer Rating Form. The Staff Member Information Form covered such areas as educational background, work history, and preservice training of the teachers and teacher aides. The Observer Rating Form, administered twice during the evaluation period, involved lengthy descriptive ratings of the teachers by trained personnel following direct observation of classroom activity; the form contains 47 items referring to a wide variety of teacher classroom behaviors thought to be relevant to the children's cognitive and personal-social development.

Data on the facilities and programs were obtained by a Center Facilities and Resources Inventory completed by the Center Directors. One part of the form is concerned with the physical properties of the Head Start Center (e.g., amount of indoor and outdoor play area); the second section attempts to assess the Center Director's attitudes about the value of education, particularly for low-income children.

From the instruments summarized above, a total of 19 variables were derived; these included six program variables, seven dependent (performance) variables, and six variables used to define different subsets of children. The program variables and performance variables are described in the remaining paragraphs of this section; the subsetting variables are discussed in subsequent sections describing the results of analyses that made use of those subsetters.

1. Program Variables

a. Teacher's Education

This variable was selected for analysis because of its strong (negative) relationship with children's performance in the 1968-69 data, and to a lesser extent in the 1967-68 data. It was felt important to obtain further evidence on this issue, which has such important implications for Head Start policy regarding the selection and training of teachers.

The variable was derived from an item in the Staff Member Information Form, regarding the number of years of schooling completed by the head teacher in each class. Possible values on the scale can range from 0 (no years of education) to 7 (five or more years of college).

b. Teacher's Experience with Preschoolers and Poverty Children

As with Teacher's Education, this variable was included in the 1966-67 analyses primarily because of the negative relationship which a similar variable had with children's performance in 1968-69 and 1967-68. The 1966-67 variable was derived from six items in the Staff Member Information Form; each item dealt with a particular type of prior (pre-Head Start) paid or volunteer experience in working with preschoolers and/or with poverty children. On each item, a value of 0 meant that the teacher had less than six months of the particular type of experience in question (e.g., experience as a paid staff member with preschoolers); a value of 1 represented from six months to three years of experience; a value of 2 indicated from three to five years' experience; and a value of 3 meant that the teacher had over five years' experience. Values were added over the six items, so that the possible values on the derived variable ranged from 0 to 18.

c. Teacher's Social Development Techniques

This and the following two variables were derived from data obtained in the second administration of the Observer Rating Form (ORF). The variables were of particular interest for two reasons. First, the ORF was the only source of data reflecting observed classroom interactions between teachers and children. Second, the three derived variables appear to be related, at least at a general conceptual level, to certain variables which in the 1968-69 data showed significant relationships with some measures of children's performance. "Nonpunitiveness", for example, seems to reflect many of the same teacher traits as

"Teacher's Use of Physical Control", a variable that was investigated in the 1968-69 data (see TM-4862/000). Similarly, "Teacher's Social Development Techniques" appears somewhat related to the 1968-69 variable, "Program Emphasis on Child Socialization"; and "Teacher's Academic Orientation" seems to partially overlap two of the variables used in 1968-69, "Emphasis on Language Program," and "Teacher's Quality of Cognitive Input."

Teacher's Social Development Techniques is based on ten items in the ORF dealing with observed teacher behaviors felt to promote effective social/emotional development in the children. For example, observers rated teachers on "Extent teacher attempts to inculcate in the child acceptance of personal responsibility versus placing blame on others"; "Teacher seems to have specific techniques for handling emotional problems of children"; and "Extent teacher attempts to inculcate respect for property of others".

Each of the ten items was rescaled so that a high value represents a positive action on the part of the teacher, i.e., an action which would presumably foster social development. For example, on an item related to "Extent teacher attempts to inculcate respect for property of others," a value of 7 was given to the rating, "Almost constant attempts to do so". A value of 6 corresponds to "Very frequent attempts to do so"; 5 means "Many attempts to do so"; and so on, down to a value of 1 ("No attempts to do so"). The possible range of values on each item was from 1 to 7; values on the derived variable had the same possible range, since the variable was calculated by averaging values across items.

d. Teacher's Nonpunitiveness

This variable was derived from six items on the ORF dealing with the teacher's observed modes of punishment and/or rewards used to control the children's behavior. For example, there were items on which observers rated "Degree teacher uses negative vs. positive reinforcement in behavior," and "Type of punishment teacher uses for behavior problems". All items were rescaled so that a high value was assigned to teacher behaviors that involved positive rather than negative reinforcement. On the question concerning "Type of punishment teacher uses," a value of 9 was given for "Diverting child to new activity"; a value of 8 for "Calling in other adults"; a value of 7 for "Talking to the child--reasoning"; a value of 6 for "Loss of privilege"; and so on, down to a value of 1 for "Physical punishment".

The possible range of values was 1 to 7 on some items, and 1 to 9 on others. Individual items were averaged to obtain the derived variable scores, which could range from 1 to 7.33.

e. Teacher's Academic Orientation

This variable was based on 17 items from the OIF dealing with the teacher's observed degree of emphasis on academically oriented classroom activities. Examples of these items include, "Uses multi-sensory stimulation in teaching"; "Consistently uses a feedback system to develop language facility"; "Uses language model"; "Degree to which teacher provides for visual discrimination"; "Extent teacher encourages use of an adult as a resource person"; etc.

Values on each item, and on the derived variable, could range from 1 to 7. A value of 7 represents a teacher who made "almost constant attempts" to lead children in academically oriented behaviors, while a value of 1 means that the teacher made "No attempts to do so".

f. Adequacy of Outdoor Play Equipment

This variable was included in the analyses because of its apparent similarity to a 1968-69 variable (Large - Muscle Equipment) which was found to have strong positive relationships with several performance measures. Adequacy of Outdoor Play Equipment is based on a single item from the Class Facilities and Resources Inventory, in which the Center Director rated the adequacy of his Center's outdoor play equipment along two dimensions: quantity and variety. Responses were rescaled so that a value of 2 indicates a Center in which the equipment was "adequate in both quantity and variety"; a value of 1 means that it was adequate in either quantity or variety, but not both; and a value of 0 means that outdoor play equipment was "not available".

2. Dependent (Performance) Variables

a. Cognitive Behavior

As in the 1967-68 and 1968-69 studies, Stanford - Binet IQ was used as an important measure of the children's general aptitude, while recognizing that performance on this instrument also includes a motivational component. The IQ scores used in the 1966-67 analyses were taken directly from the Stanford - Binet recording form.

Five scores related to cognitive performance were derived from the Preschool Inventory. The first is the total score, expressed in percentile figures; the norms used to calculate the percentile scores were provided by Caldwell, one of the instrument's developers, and were based on a sample of non-Head Start disadvantaged preschoolers.

Four subscores, expressed in percentiles, were also derived from the Preschool Inventory. Although the subscores are not true factor scores, they were based on subsets of items in the Preschool Inventory that were previously identified by factor analytic methods. A high value on any of the subscores means that the child exhibited a high level of the behavior in question.

The first Preschool Inventory subscore, Personal-Social Responsiveness, is intended to reflect the child's knowledge of his own personal world and his ability to get along with and respond to communications of another person. The second subscore, Associative Vocabulary, is intended to measure the child's ability to demonstrate awareness of the connotation of a word by carrying out some action or by associating to certain intrinsic qualities of the underlying verbal concept. Concept Activitation-Numerical, the third subscore, reflects the child's ability to label quantities, to make judgments of "more" or "less," and to recognize serial positions. The fourth subscore, Concept Activation-Sensory, is intended as a measure of the child's awareness of certain sensory attributes (shape, size, motion, color) and of his ability to perform certain visual-motor tasks.

b. Social/Emotional Behavior

A total raw score was computed from the 50-item Behavior Inventory used by teachers to rate each child's sociability, independence, curiosity, persistence, emotionability, self-confidence, jealousy, achievement, and leadership. Each item was scaled from 1 to 4, with a high value representing a desirable rating. For example, on an item asking whether the student "Is sympathetic, considerate, and thoughtful toward others," a rating of "Very much" was given a value of 4; a rating of "Somewhat like" was given a value of 3; "Very little like" was valued at 2; and "Not at all like" was valued at 1. The possible range of total raw scores is 50 to 200; a high total indicates that a child was rated by his teacher as sociable, persistent, non-jealous, self-confident, high in leadership, etc.

B. CHILDREN'S ENTRY CHARACTERISTICS

Tables 118 through 127 show frequency distributions for several of the children's entry characteristics. There were almost equal numbers of urban and non-urban children (50.51% and 49.4%, respectively). As defined for 1966-67, urban children were those from cities with populations of greater than 100,000; non-urban children were from urban fringes, rural communities, and cities or towns of less than 100,000 population. (Coding of the data records for 1966-67 did not permit using the same urban/non-urban division point used for 1967-68 and 1968-69, i.e., 50,000 inhabitants).

The children were almost evenly divided between males (50.23%) and females (49.77%). At the start of the evaluation period, over four-fifths of the children (84.4%) were between 48 and 71 months old, and the median age was around 57 months (compared with a median of 53 months for 1967-68).

Data from the pretest administration of the Stanford - Binet (Table 121) indicate that the Head Start children entered the programs with general aptitude scores somewhat below the general norm. The mean pretest IQ was 92.03, as compared with the general population average of 100.

Table 118

DISTRIBUTION OF VALUES ON URBAN/NON-URBAN RESIDENCE 1966-67

	Freq.	Percentage of Non-Blanks
Urban	936	50.51
Non-Urban	917	49.49
	N = 1853	

Table 119

DISTRIBUTION OF VALUES ON CHILD'S SEX 1966-67

	Freq.	Percentage of Non-Blanks
Male	1004	50.23
Female	995	49.77
	N = 1999	

Table 120

DISTRIBUTION OF VALUES ON CHILD'S AGE AT ENTRY (MONTHS) 1966-67

Values	Freq.	Percentage of Non-Blanks
Over 71	173	7.5
60 - 71	739	32.0
48 - 59	1215	52.6
36 - 47	182	7.9
	N = 2309	

Table 121

DISTRIBUTION OF VALUES ON STANFORD-BINET (PRE) 1966-67

Values	Freq.	Percentage of Non-Blanks
Above 135	8	0.41
131 - 135	9	0.46
126 - 130	13	0.66
121 - 125	25	1.27
116 - 120	52	2.64
111 - 115	85	4.31
106 - 110	119	6.04
101 - 105	194	9.84
96 - 100	274	13.90
91 - 95	285	14.46
86 - 90	287	14.56
81 - 85	234	11.87
76 - 80	150	7.61
71 - 75	113	5.73
66 - 70	51	2.59
61 - 65	42	2.13
Below 61	30	1.52

N = 1971

M = 92.03

Table 122

DISTRIBUTION OF VALUES ON TOTAL PRESCHOOL INVENTORY PERCENTILE (PRE) 1966-67

Values	Freq.	Percentage of Non-Blanks
90 - 99	140	7.14
80 - 89	120	6.12
70 - 79	182	9.29
60 - 69	195	9.95
50 - 59	174	8.88
40 - 49	268	13.67
30 - 39	198	10.10
20 - 29	233	11.89
10 - 19	265	13.52
0 - 9	185	9.44
	N = 1960	
	M = 43.93	

Table 123

DISTRIBUTION OF VALUES ON
PERSONAL-SOCIAL RESPONSIVENESS PERCENTILE (PRE)
1966-67

Values	Freq.	Percentage of Non-Blanks
90 - 99	87	4.39
80 - 89	153	7.73
70 - 79	210	10.61
60 - 69	232	11.72
50 - 59	188	9.49
40 - 49	313	15.81
30 - 39	194	9.49
20 - 29	306	15.45
10 - 19	162	8.18
0 - 9	135	6.82
	N = 1980	

Table 124

DISTRIBUTION OF VALUES ON ASSOCIATIVE-VOCABULARY PERCENTILE (PRE)
1966-67

Values	Freq.	Percentage of Non-Blanks
90 - 99	70	3.56
80 - 89	201	10.21
70 - 79	275	13.97
60 - 69	198	10.06
50 - 59	168	8.52
40 - 49	186	9.45
30 - 39	193	9.80
20 - 29	263	13.36
10 - 19	204	10.35
0 - 9	211	10.72

N = 1969

M = 44.43

Table 125

DISTRIBUTION OF VALUES ON CONCEPT ACTIVATION - NUMERICAL PERCENTILE (PRE)

1966-67

Values	Freq.	Percentage of Non-Blanks
90 - 99	91	4.61
80 - 89	153	7.75
70 - 79	163	8.26
60 - 69	197	9.98
50 - 59	193	9.78
40 - 49	279	14.13
30 - 39	268	13.58
20 - 29	248	12.56
10 - 19	201	10.18
0 - 9	181	9.17

N = 1974

M = 42.60

Table 126

DISTRIBUTION OF VALUES ON CONCEPT ACTIVATION - SENSORY PERCENTILE (PRE)

1966-67

Values	Freq.	Percentage of Non-Blanks
90 - 99	97	4.90
80 - 89	104	5.26
70 - 79	220	11.12
60 - 69	225	11.38
50 - 59	196	9.90
40 - 49	305	15.41
30 - 39	250	12.63
20 - 29	236	11.93
10 - 19	169	8.54
0 - 9	177	8.93

N = 1979

M = 44.06

Table 127

DISTRIBUTION OF VALUES ON BEHAVIOR INVENTORY: TOTAL RAW SCORE (PRE)

1966-67

Values*	Freq.	Percentage of Non-Blanks
Above 189	10	0.48
180 - 189	69	3.28
170 - 179	146	6.95
160 - 169	217	10.32
150 - 159	270	12.84
140 - 149	308	14.65
130 - 139	323	15.37
120 - 129	314	14.94
110 - 119	198	9.42
100 - 109	129	6.14
90 - 99	67	3.19
80 - 89	35	1.66
Below 80	16	0.76
	N = 2102	
	M = 138.58	

---

*Values shown are total points out of a possible 200 points.

The Head Start children's average entry score on the Preschool Inventory was below that obtained by the disadvantaged children on whom Caldwell calculated percentile norms for the instrument. The pretest mean for the total test was below the 44th percentile. Mean scores on the four subtests were as follows:

	Mean (Percentile)
Personal-Social Responsiveness	44.98
Associative Vocabulary	44.43
Concept Activation-Numerical	42.60
Concept Activation-Sensory	44.06

The mean pretest raw score on the Behavior Inventory was 138.58 out of a possible 200 points. It is difficult to interpret this entry score, because of the lack of norming data, but information on gains is discussed in a later section of this chapter.

C. PROGRAM CHARACTERISTICS

As Table 128 shows, most of the Head Start teachers in 1966-67 had fairly high levels of general education. Almost nine-tenths (88.61%) of the children had teachers who had attended college, and almost a fourth (24.70%) had teachers who had taken some post-graduate work.

Most of the teachers had little prior (pre-Head Start) experience in working with preschoolers and disadvantaged children (Table 129). Almost half of the children (47.63%) had teachers with less than six months of total experience, and almost two-thirds had teachers with less than two years' experience.

Based on scores recorded by observers in the Observer Rating Form, most teachers placed only moderate emphasis on Social Development Techniques (Table 130). The median value on this derived scale was 3.1, or somewhat below midpoint in the range of possible values (1 to 7).

Most teachers were observed to make little use of punishment, and virtually no use of physical punishment. The median value on the Nonpunitiveness scale

Table 128

DISTRIBUTION OF VALUES ON TEACHER'S EDUCATION

1966-67

	Freq.	Percentage of Non-Blanks
5 or more years college	533	24.70
3-4 years college	1165	53.99
1-2 years college	214	9.92
11-12 years public school	193	8.94
9-10 years public school	17	0.78
5-8 years public school	9	0.42
1-4 years public school	27	1.25
	N = 2158	

Table 129

DISTRIBUTION OF VALUES ON TEACHER'S EXPERIENCE WITH PRESCHOOLERS AND POVERTY CHILDREN

1966-67

Values	Freq.	Percentage of Non-Blanks
Over five years	450	21.08
Three to five years	278	13.02
Six months to two years	390	18.27
Under six months	1017	47.63
	N = 2135	

Table 130

DISTRIBUTION OF VALUES ON TEACHER'S SOCIAL DEVELOPMENT TECHNIQUES 1966-67

Values*	Freq.	Percentage of Non-Blanks
6.50 - 6.99	9	0.39
6.00 - 6.49	38	1.64
5.50 - 5.99	70	3.03
5.00 - 5.49	116	5.02
4.50 - 4.99	214	9.25
4.00 - 4.49	326	14.10
3.50 - 3.99	196	8.48
3.00 - 3.49	303	13.11
2.50 - 2.99	295	12.75
2.00 - 2.49	432	18.69
1.50 - 1.99	277	11.98
1.00 - 1.49	36	1.56
	N = 2312	

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*Each value on this scale is an average of values on ten items from the ORF dealing with observed teacher behaviors felt to promote effective social/emotional development in children. A high value represents frequent actions that would presumably foster social development. For example, for the teacher behavior, "Extent teacher attempts to inculcate respect for property of others," a value of 7 means "Almost constant attempts to do so;" 6 means "Very frequent attempts to do so;" 5 means "Many attempts to do so;" 4 means "Some attempts to do so;" 3 means "Few attempts to do so;" 2 means "Rare attempts to do so;" and 1 means "No attempts to do so."

(Table 131) was about 4.82, which is above midpoint on the possible range of 1 to 7.33.

As in 1967-68 and 1968-69, there was little emphasis by most teachers on academically oriented activities (Table 132). The median value on the Academic Orientation scale was around 2.64, or well below midpoint on the possible range of 1 to 7.

Outdoor play equipment was in moderately good supply in most Head Start centers (Table 133), as reported by the Center Directors. Almost half of the children (49.47%) were in centers with both adequate quantity and variety of equipment, and another 38.38% were in centers where the equipment was reported to be adequate in quantity or variety, but not in both attributes.

D. GAINS ASSOCIATED WITH HEAD START

In both 1967-68 and 1968-69, significant pretest/posttest gains were experienced by the Head Start children on a number of important dependent variables. Was this also true in 1966-67? Table 134 summarizes all findings on the t-test comparisons of pretest and posttest performance for 1966-67. The column at the far left lists the dependent variables. Other columns, from left to right, show the sample sizes; the means of the pretest scores (for children with both pretest and posttest data); the means of the posttest scores; the mean gain scores; and the t-ratios of the gain scores. A double asterisk after a t-ratio indicates that the gain (or loss) was significant at the .01 level (two-tailed test). Appendix B contains tables showing the frequency distributions for the pretest scores, the posttest scores, and the gain scores on each dependent variable.

As Table 134 shows, the Head Start children in 1966-67 made significant gains (.01 level) on all of the seven performance measures used in this study. The gain on the Stanford - Binet was almost four points, compared with gains of around four-and-a-half points in 1967-68 and 1968-69. Although this gain appears modest, and still left the children below the general population norm of 100, it must be interpreted in the light of the fact that the mean pretest/posttest interval in 1966-67 was only about four months.

Table 131

DISTRIBUTION OF VALUES ON TEACHER'S NON-PUNITIVENESS 1966-67

Values*	Freq.	Percentage of Non-Blanks
7.00 - 7.49	21	0.92
6.50 - 6.99	20	0.88
6.00 - 6.49	272	11.94
5.50 - 5.99	326	14.30
5.00 - 5.49	433	19.00
4.50 - 4.99	457	20.05
4.00 - 4.49	247	10.84
3.50 - 3.99	265	11.63
3.00 - 3.49	147	6.45
2.50 - 2.99	72	3.16
2.00 - 2.49	19	0.83
	N = 2279	

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*Each value on this scale is an average of values on six items from the ORF dealing with observed teacher modes of punishment and/or rewards used to control children's behavior. A high value represents frequent teacher use of positive rather than negative reinforcement. For example, on a question concerning "Type of punishment teacher uses," a value of 9 represents "Diverting child to new activity;" 8 means "Calling in other adults;" 7 means "Talking to the child--reasoning;" 6 means "Loss of punishment;" and so on, down to a value of 1 for "Physical punishment."

Table 132

DISTRIBUTION OF VALUES ON TEACHER'S ACADEMIC ORIENTATION 1966-67

Values*	Freq.	Percentage of Non-Blanks
6.50 - 6.99	9	0.39
6.00 - 6.49	18	0.78
5.50 - 5.99	34	1.47
5.00 - 5.49	97	4.20
4.50 - 4.99	79	3.42
4.00 - 4.49	175	7.57
3.50 - 3.99	272	11.76
3.00 - 3.49	292	12.63
2.50 - 2.99	358	15.48
2.00 - 2.49	492	21.28
1.50 - 1.99	294	12.72
1.00 - 1.49	192	8.30
	N = 2312	

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*Each value on this scale is an average of values on 17 items from the ORF dealing with the teacher's emphasis on academically oriented classroom activities. A high value indicates frequent observations of teacher activities showing such emphasis. For example, for an item concerned with the teacher's efforts to "Lead children in academically oriented behaviors," a value of 7 represents a teacher who made "Almost constant attempts" to do so; a value of 6 means "Very frequent attempts;" 5 means "Many attempts;" 4 means "Some attempts;" 3 means "Few attempts;" 2 means "Rare attempts;" and 1 means "No attempts."

Table 133

DISTRIBUTION OF VALUES ON ADEQUACY OF OUTDOOR PLAY EQUIPMENT

1966-67

	Freq.	Percentage of Non-Blanks
Adequate in Quantity and Variety	1030	49.47
Adequate in Quantity or Variety	799	38.38
Not Available	253	12.15
	N = 2082	

Table 134

PRETEST-POSTTEST PERFORMANCE CHANGES (1966-67)

Dependent Variable	N	Pretest Mean	Posttest Mean	Mean Change	t
Stanford-Binet	1764	92.15	96.13	3.98	16.33**
Total Preschool Inventory Percentile	1664	43.39	57.19	13.80	28.88**
Pers.-Social Resp. Percentile	1687	44.96	56.61	11.65	22.68**
Associative-Vocab. Percentile	1675	44.14	54.72	10.58	18.88**
Concept. Activ.-Numer. Percentile	1680	42.21	50.99	8.78	15.82**
Concept. Activ.-Sensory Percentile	1686	43.85	54.85	11.00	19.91**
Behavior Inventory	1845	138.83	143.50	4.68	9.59**

**Difference significant at .01 level

Gains on the Preschool Inventory were somewhat more impressive, with the Head Start children beginning the evaluation period below the median value established by Caldwell's norming group, and ending the period substantially above the norming group's median.[1]

The children showed significant affective as well as cognitive growth, registering a mean gain in total raw score on the Behavior Inventory of 4.68 points. This is not a large gain in absolute quantity, for a scale which had a possible maximum of 200 points. Furthermore, since the scores were not age-adjusted, the gains may reflect maturational effects. Nevertheless, there is at least evidence that some social-emotional development did occur during the evaluation period.

As in 1967-68 and 1968-69, there were sizable variations among children in the gains (or losses) experienced on the seven performance measures (see Appendix B for frequency distributions of gain scores). The following sections of this chapter address the question of whether those changes were associated with (1) characteristics of the children and their family backgrounds, (2) features of the programs that they attended, and/or (3) interactions between the child and program characteristics.

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[1] It will be noted in Table 134 that the percentile gain made on each of the subscores of the Preschool Inventory was smaller than the percentile gain for the total test. This finding raises some questions as to the accuracy of the percentile data which were contained on the computer tapes provided to SDC for its analyses; conceivably, however, the apparent discrepancy in the magnitude of the gains for the total score and the subscores could have resulted from anomalies in the distribution of the data, especially if a small sample of children was used to establish the norming data on which the conversions to percentile scores were based.

E. DIFFERENCES IN GAINS FOR DIFFERENT TYPES OF CHILDREN

Tables 135 through 138 show comparisons of performance changes for different groups of children (e.g., different age groups, different geographic areas of residence). For example, Table 135 compares gains for Young and Old children. From left to right, the columns show the dependent variables; the sample sizes, pretest means, posttest means, and mean gains on each dependent variable for one subgroup (i.e., Young children); the corresponding data for the second subgroup (Old children); and the differences in mean gains for the two subgroups. A double asterisk (**) after the difference value means that the difference was significant at the .01 level; a single asterisk (*) designates a .05 level of significance.

1. Child's Age

As indicated in Table 135, the Preschool Inventory was the only instrument on which there were significant differences in gains for children below 60 months in age at posttest time, and children 60 months or older. The younger children made larger gains on the total Preschool Inventory and on three subtests from that instrument: Personal-Social Responsiveness, Concept Activation-Numerical, and Concept Activation-Sensory. This trend toward larger gains for the Younger children is consistent with that found in 1967-68 and 1968-69.

2. Child's Pretest IQ

As shown in Table 136,, IQ gains followed the same pattern of relationships with entry IQ as found in 1967-68 and 1968-69. That is, the lower the pretest IQ, the larger the gain. As noted previously (Chapter VII) for 1967-68 data, it is possible that the findings on IQ gains may partly reflect a regression-toward-the-mean phenomenon. There was no similar relationship between entry IQ and gains on the Preschool Inventory or on the Behavior Inventory.

3. Child's Urban/Non-Urban Residence

Table 137 shows that the Non-Urban children made significantly larger gains than Urban children on the Stanford - Binet and on the Behavior Inventory. Again, since the Non-Urban children also had lower pretest scores on those

Table 135

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH CHILD'S AGE (1966-67)

Dependent Variable	Young (Below 60 Mos.)				Old (60 Mos. and Above)				Diff. in Gain[1]
	N	Pretest Mean	Posttest Mean	Mean Gain	N	Pretest Mean	Posttest Mean	Mean Gain	
Stanford-Binet	679	94.66	99.12	4.46	1085	90.58	94.26	3.68	-0.78
Total Preschool Inventory Percentile	721	38.92	55.26	16.34	943	46.82	58.68	11.86	-4.48**
Pers.-Social Resp. Percentile	730	41.20	54.02	12.82	957	47.83	58.58	10.75	-2.07*
Associative-Vocab. Percentile	725	42.63	54.10	11.47	950	45.28	55.19	9.91	-1.56
Concept. Activ.-Numer. Percentile	729	38.37	48.42	10.05	951	45.16	52.96	7.80	-2.15*
Concept. Activ.-Sensory Percentile	729	39.80	53.72	13.92	957	46.93	55.71	8.78	-5.14**
Behavior Inventory	767	135.98	140.15	4.17	1077	140.84	145.89	5.05	0.88

**Difference significant at .01 level

*Difference significant at .05 level

[1] Sign of difference is positive when value for Old children is larger.

Table 136

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH CHILD'S PRETEST IQ (1966-67)

Dependent Variable	Low IQ (Below 85)				Mid IQ (85-95)				High IQ (Over 95)				Diff. in Gain Low-Mid IQ	Diff. in Gain Low-High IQ	Diff. in Gain Mid-High IQ
	N	Pre-test Mean	Post-test Mean	Mean Gain	N	Pre-test Mean	Post-test Mean	Mean Gain	N	Pre-test Mean	Post-test Mean	Mean Gain			
Stanford-Binet	503	75.46	83.75	8.29	556	90.01	95.07	5.06	705	105.75	105.79	0.04	3.23**	8.25**	5.02**
Total Preschool Inventory Percentile	398	26.83	39.78	12.95	451	41.32	54.79	13.47	560	56.56	70.11	13.55	-0.52	-0.60	-0.08
Pers.-Social Resp. Percentile	404	32.35	43.73	11.38	455	43.98	54.80	10.84	570	54.75	66.02	11.27	0.54	0.11	-0.43
Associative-Vocab. Percentile	399	29.43	40.18	10.75	453	41.59	51.99	10.40	567	55.59	64.90	9.31	0.35	1.44	1.09
Concept. Activ.-Numer. Percentile	399	29.03	37.83	8.80	451	40.64	48.55	7.91	573	52.31	61.68	9.37	0.89	-0.57	-1.46
Concept. Activ.-Sensory Percentile	402	30.16	40.39	10.23	454	42.06	52.98	10.92	573	54.28	65.66	11.38	-0.69	-1.15	-0.46
Behavior Inventory	491	131.08	134.97	3.89	538	138.64	143.27	4.63	680	146.06	149.96	3.90	-0.74	-0.01	0.73

**Difference significant at .01 level

Table 137

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH CHILD'S URBAN/NON-URBAN RESIDENCE (1966-67)

Dependent Variable	Urban				Non-Urban				Diff. in Gain[1]
	N	Pretest Mean	Posttest Mean	Mean Gain	N	Pretest Mean	Posttest Mean	Mean Gain	
Stanford-Binet	717	93.88	97.12	3.24	693	91.92	96.52	4.60	1.36*
Total Preschool Inventory Percentile	717	43.39	56.98	13.59	648	43.94	58.52	14.58	0.99
Pers.-Social Resp. Percentile	721	45.82	57.13	11.31	660	44.48	56.98	12.50	1.19
Associative-Vocab. Percentile	717	44.40	55.79	11.39	655	44.13	55.47	11.34	-0.05
Concept. Activ.-Numer. Percentile	723	40.36	48.83	8.47	656	44.05	53.66	9.61	1.14
Concept. Activ.-Sensory Percentile	722	42.77	53.69	10.92	658	46.28	56.71	10.43	-0.49
Behavior Inventory	733	140.53	144.16	3.63	752	139.51	145.50	5.99	2.36*

*Difference significant at .05 level

[1] Sign of difference is positive when value for Non-Urban group is larger.

two measures, this finding may indicate a regression effect as much as it points to possible superior program benefits for the Non-Urban group.

4. Pretest-Posttest Interval

Because of the substantial variations among sites in the time interval between pretest and posttest administrations of the performance measures, it was felt of interest to determine how this interval was related to performance gains. The interval used in the analyses for the Preschool Inventory and the Stanford - Binet was that for the Preschool Inventory. (Data on the Stanford - Binet interval were not available, but in most sites the intervals for the Stanford - Binet and the Preschool Inventory were very similar.) The pretest-posttest interval for the Behavior Inventory was analyzed in relation to gains on that same measure. For both the Preschool Inventory and the Behavior Inventory, a "Short" interval was defined as one of 17 weeks or less, and a "Long" interval was greater than 17 weeks.

The pretest-posttest interval was not significantly related to Stanford - Binet IQ gains. As Table 138 indicates, however, children with greater program exposures (i.e., longer intervals) did make significantly larger gains on the total Preschool Inventory, the Personal-Social Responsiveness subtest, the Associative-Vocabulary subtest, and the total Behavior Inventory. Overall, the results suggest a cumulative program effect., though as noted previously, a causal relationship between program exposure and performance gains cannot be directly proven.

F. DIFFERENCES IN GAINS ASSOCIATED WITH DIFFERENT PROGRAM APPROACHES

A series of one-way analyses of variance were performed to determine whether some program approaches were associated with greater performance gains than other approaches. Each set of analyses examined the relationship between a selected program variable and each of the selected dependent variables. The unit for these analyses was the individual child, and an analysis-of-variance model was used in which unequal sized cells were unweighted.

Table 138

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH PRETEST-POSTTEST INTERVAL (1966-67)

Dependent Variable	Short				Long				Diff. in Gain[1]
	N	Pretest Mean	Posttest Mean	Mean Gain	N	Pretest Mean	Posttest Mean	Mean Gain	
Stanford-Binet	635	90.43	94.84	4.41	660	91.87	95.96	4.09	-0.32
Total Preschool Inventory Percentile	580	47.14	58.35	11.21	809	41.62	57.39	15.77	4.56**
Pers.-Social Resp. Percentile	593	48.30	57.02	8.72	815	43.20	56.31	13.11	4.39**
Associative-Vocab. Percentile	588	46.33	53.82	7.49	811	44.54	56.89	12.35	4.86**
Concept. Activ.-Numer. Percentile	590	46.32	53.83	7.51	816	40.62	50.13	9.51	2.00
Concept. Activ.-Sensory Percentile	593	46.77	57.01	10.24	815	41.91	53.60	11.69	1.45
Behavior Inventory	994	136.45	140.18	3.73	851	141.59	147.39	5.80	2.07*

**Difference significant at .01 level

*Difference significant at .05 level

[1] Sign of difference is positive when value for Long interval is larger.

The program variables and dependent variables used in the analyses of variance were those defined above in Section A. Program variables included three scores derived from the Observer Rating Form; the level of the teachers' education; the teachers' amount of experience with poverty children; and the adequacy of the centers' outdoor play equipment. Dependent variables were the Stanford - Binet IQ; the Total Preschool Inventory, and four subtests comprising that instrument; and the Behavior Inventory total raw score.

As previously described for the 1967-68 and 1968-69 data (see Chapter VIII), adjusted posttest scores were calculated for all the performance measures to be used in the analyses of variance. In this procedure the posttest scores were adjusted by regression techniques to correct for pretest differences among the children, and the adjusted posttest scores were then used in place of simple gain scores or the dependent variables in the analyses of variance.

Tables 139 through 144 show the results of the analyses of variance for the different program variables. The columns in each table contain, from left to right, the names of the dependent variables; the means and standard deviations on each dependent variable of the children in the lowest level of the program variable (e.g., children in classes whose teacher had a low level of prior experience with disadvantaged children); the means and standard deviations for children in successively higher levels of the program variable; the total number of degrees of freedom in the analysis of variance; and the resulting F-ratio. F-ratios are marked with a double asterisk if they are significant at the .01 level, and a single asterisk if they reach the .05 level of significance.

Three of the program variables (Teacher's Social Development Techniques, Teacher's Non-Punitiveness, and Adequacy of Outdoor Play Equipment) showed no significant relationships with any of the performance measures. The other three program variables were significantly related to the adjusted posttest scores on at least one dependent variable; each of these program variables is discussed in the following paragraphs.

1. Teacher's Education

As Table 139 shows, Teacher's Education was related to performance on two subscores of the Preschool Inventory (Associative-Vocabulary, and Concept Activation-Sensory). However, there does not appear to be any consistent trend in the relationships across measures, as the two Preschool Inventory subscores are related in opposite directions to the program variable.

2. Teacher's Experience with Preschoolers and Poverty Children

Children having teachers with more years of experience made larger IQ gains (.05 level) than children with less experienced teachers (see Table 140). This appears to reverse the general trend found in the data for 1967-68 and 1968-69. The possibility that this relationship might have resulted from confounding of Teacher's Experience with other program or child differences is examined below in Section G.

3. Teacher's Academic Orientation

The results shown in Table 141 indicate that greater IQ gains were made by children whose teachers were observed to place a greater emphasis on academically oriented classroom activities. This trend is logical, because of the strong cognitive/academic orientation of the Stanford - Binet. However, the same trend did not carry over to another cognitive measure, the Preschool Inventory.

G. RELATIONSHIPS BETWEEN PROGRAM APPROACHES AND PERFORMANCE FOR DIFFERENT SUBGROUPS OF CHILDREN

This section is concerned with possible interactions between program variables and child background variables as reflected in the children's performance gains. That is, it seeks to determine whether certain program approaches were consistently associated with higher performance for all subgroups, or whether there were differential relationships for different subgroups. Separate one-way analyses of variance were performed for different subsets of children, so as to provide independent measures of the associations between program variables and performance for children of different age levels, different pretest IQ's etc.

Table 139

RESULTS OF ANALYSES OF VARIANCE ON
TEACHER'S EDUCATION (1966-67)

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	95.98	10.22	95.68	9.41	1636	0.28
Total Preschool Inventory Percentile	54.98	16.14	57.12	18.43	1547	3.39
Pers.-Social Resp. Percentile	54.86	18.59	56.29	18.57	1569	1.45
Associative-Vocab. Percentile	48.31	19.56	51.43	20.97	1557	5.54*
Concept Activ.-Numer. Percentile	53.94	20.22	52.04	20.96	1563	2.02
Concept Activ.-Sensory Percentile	58.45	20.00	55.85	19.93	1568	4.16*
Behavior Inventory	142.40	18.18	141.66	18.76	1709	0.46

M_1 = Mean for low level of teacher's education

*F significant at .05 level

M_2 = Mean for high level of teacher's education

Table 140

RESULTS OF ANALYSES OF VARIANCE ON TEACHER'S EXPERIENCE WITH PRESCHOOLERS AND POVERTY CHILDREN (1966-67)

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	95.67	9.93	96.86	9.14	1621	6.29*
Total Preschool Inventory Percentile	57.58	18.34	58.04	17.83	1534	0.26
Pers.-Social Resp. Percentile	56.92	18.97	57.42	18.20	1555	0.29
Associative-Vocab. Percentile	53.23	21.12	54.80	20.32	1543	2.22
Concept Activ.-Numer. Percentile	52.71	21.29	50.87	20.40	1549	3.01
Concept Activ.-Sensory Percentile	56.13	20.16	54.94	19.72	1554	1.38
Behavior Inventory	144.54	18.21	144.67	18.78	1691	0.02

M_1 = Mean for low level of teacher's experience

*F significant at .05 level

M_2 = Mean for high level of teacher's experience

Table 141

RESULTS OF ANALYSES OF VARIANCE ON
TEACHER'S ACADEMIC ORIENTATION (1966-67)

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	96.17	9.28	97.74	9.85	1763	11.45**
Total Preschool Inventory Percentile	57.86	18.04	58.46	18.13	1663	0.45
Pers.-Social Resp. Percentile	57.24	18.26	57.18	19.09	1686	0.00
Associative-Vocab. Percentile	54.30	20.69	55.47	20.79	1674	1.32
Concept Activ.-Numer. Percentile	52.26	20.83	50.96	20.73	1679	1.64
Concept Activ.-Sensory Percentile	55.08	20.11	55.89	19.59	1685	0.69
Behavior Inventory	144.35	17.76	143.57	19.83	1844	0.80

M_1 = Mean for low level of academic orientation

**F significant at .01 level

M_2 = Mean for high level of academic orientation

Table 142

RESULTS OF ANALYSES OF VARIANCE ON TEACHER'S SOCIAL DEVELOPMENT TECHNIQUES (1966-67)

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	95.99	9.39	96.83	9.66	1763	3.45
Total Preschool Inventory Percentile	57.23	17.68	58.11	18.35	1663	0.96
Pers.-Social Resp. Percentile	56.33	18.29	57.34	18.87	1686	1.21
Associative-Vocab. Percentile	53.77	20.39	54.20	21.07	1674	0.17
Concept Activ.-Numer. Percentile	51.58	21.05	51.07	20.64	1679	0.25
Concept Activ.-Sensory Percentile	55.73	20.11	55.58	19.72	1685	0.02
Behavior Inventory	142.72	18.33	144.25	18.93	1844	3.07

M_1 = Mean for low emphasis on social development

M_2 = Mean for high emphasis on social development

Table 143

RESULTS OF ANALYSES OF VARIANCE ON

TEACHER'S NON-PUNITIVENESS (1966-67)

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	96.15	9.62	96.14	9.37	1742	0.00
Total Preschool Inventory Percentile	57.41	17.30	57.09	18.96	1643	0.13
Pers.-Social Resp. Percentile	57.29	17.77	56.57	19.47	1665	0.62
Associative-Vocab. Percentile	55.74	20.45	54.82	21.07	1653	0.81
Concept Activ.-Numer. Percentile	51.01	21.06	50.87	20.32	1658	0.02
Concept Activ.-Sensory Percentile	54.68	19.68	54.95	19.95	1664	0.08
Behavior Inventory	145.00	19.06	144.28	18.03	1819	0.68

M_1 = Mean for low emphasis on non-punitiveness

M_2 = Mean for high emphasis on non-punitiveness

Table 144

RESULTS OF ANALYSES OF VARIANCE ON ADEQUACY OF OUTDOOR PLAY EQUIPMENT (1966-67)

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	95.39	9.28	94.95	9.75	1580	0.85
Total Preschool Inventory Percentile	58.19	18.02	59.69	18.43	1498	2.52
Pers.-Social Resp. Percentile	57.67	18.45	57.54	19.31	1516	0.02
Associative-Vocab. Percentile	55.03	21.41	56.19	20.63	1507	1.45
Concept Activ.-Numer. Percentile	51.66	21.12	53.38	20.80	1514	2.56
Concept Activ.-Sensory Percentile	55.75	19.92	56.61	20.10	1516	0.70
Behavior Inventory	143.68	18.31	143.97	19.32	1654	0.10

M_1 = Mean for low level of adequacy

M_2 = Mean for high level of adequacy

The four subsetting variables for these analyses were Child's Age, Pretest IQ, Urban/Non-Urban Residence, and Pretest-Posttest Interval. Child's Age was used to define two subgroups, one with children under 60 months of age, and the other subgroup with children 60 months old or more. Three subgroups were defined on the Pretest IQ dimension: one subgroup with IQ's under 85; a second with IQ's between 85 and 95; and a third subgroup with IQ's over 95. Urban/Non-Urban Residence was divided at a different point than in 1967-68 and 1968-69, because of differences in the coding of the data. Urban children were defined as those in cities of at least 100,000, and Non-Urban Children as those in smaller cities, suburbs, and rural communities. Two groups were defined on the basis of Pretest-Posttest Interval; the first group contained children with intervals of 17 weeks or less, and the second group included those with intervals of greater than 17 weeks.

As noted in the discussion of the 1967-68 data (see Chapter IX), the statistical procedures used in calculating the adjusted posttest scores and in making multiple comparisons among treatments may have the effect of producing a certain number of false positives, i.e., rejection of the null hypothesis when in fact no differences existed between the treatment conditions being compared. For this reason, a distinction is made in the following presentations for the 1966-67 data between sources of variance (i.e., program "effects") that reach the .05 level of significance, and those that reach the .01 level. Use of the .01 level criterion for rejection of the null hypothesis will eliminate many of the relationships that may have been statistical artifacts, but data are also presented on findings at the .05 level, in order to provide further clues about potentially important program effects.

Table 145 through 161 present the results of the analyses of variance for the different subgroups of children. In each table, the subgrouping variable (e.g., Child's Age) is identified across the top of the table, with two (or three) values of that variable designated immediately below. The left-hand column of the table lists the dependent variables included in the analyses. The tables are simplified by including the actual cell values only for those analyses that yielded significant F-ratios. Cell entries in the first column following the list of dependent variables are the mean adjusted posttest scores for the lowest level of the program variable; then follow the mean scores for the remaining levels of the program variable. In the next column, the total degrees of freedom are indicated, followed by the F-ratios. A double asterisk after an F value means that the relationship between program variable and dependent variable was significant at the .01 level; a single asterisk indicates a .05 level of significance.

1. Teacher's Education

a. Variations with Child's Pretest IQ (Table 145)

Subsetting by pretest IQ had the effect of increasing the strength of certain relationships between Teacher's Education and children's performance. For example, a significant (.01 level) positive relationship was found in the Mid IQ groups between Pretest IQ and performance on the total Preschool Inventory. For the High IQ group, pretest IQ was positively related (.05 level) to performance on the total Preschool Inventory and on the Associative-Vocabulary subscore, and negatively related (.05 level) to performance on the Behavior Inventory. No significant relationships were found in the Low IQ group.

b. Variation with Child's Age (Table 146)

In the Young group (under 60 months), Teacher's Education was positively related (.05 level) to performance on the Associative-Vocabulary subscore of the Preschool Inventory; in the Old group, it was negatively related (.01 level) to the Concept Activation-Sensory subscores. These are essentially the same relationships found for the total sample of children.

c. Variations with Urban/Non-Urban Residence (Table 147)

No significant relationships were found within the Urban group, but among Non-Urban children, by contrast, there were more significant relationships than for the total sample. In the Non-Urban group, Teacher's Education was positively associated with the total Preschool Inventory and with two subscores for that

Table 145

ANALYSIS OF VARIANCE ON TEACHER'S EDUCATION

SUBSET BY PRETEST IQ (1966-67)

Dependent Variable	Low IQ (Below 85)				Mid IQ (85-95)				High IQ (Above 95)			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Total Preschool Inventory Percentile					51.74	56.28	410	4.09*	56.03	60.54	521	5.99*
Associative-Vocab. Percentile									48.85	53.67	528	5.16*
Behavior Inventory									146.41	142.55	625	5.65*

M_1 = Mean for low level of teacher's education

*F significant at .05 level

M_2 = Mean for high level of teacher's education

Table 146

ANALYSIS OF VARIANCE ON TEACHER'S EDUCATION

SUBSET BY CHILD'S AGE (1966-67)

Dependent Variable	Child's Age							
	Young				Old			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Associative-Vocab. Percentile	45.95	52.16	675	5.57*				
Concept Activ. - Sensory Percentile					58.74	54.28	888	9.30**

M_1 = Mean for low level of teacher's education

**F significant at .01 level

M_2 = Mean for high level of teacher's education

*F significant at .05 level

Table 147

ANALYSIS OF VARIANCE ON TEACHER'S EDUCATION

SUBSET BY URBAN/NON-URBAN RESIDENCE (1966-67)

Dependent Variable	Urban vs. Non-Urban							
	Urban				Non-Urban			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Total Preschool Inventory Percentile					54.34	58.91	622	8.07**
Pers.-Social Resp. Percentile					53.96	57.50	634	4.93*
Associative-Vocab. Percentile					46.97	53.19	629	12.39**
Behavior Inventory					145.34	141.88	723	4.93*

M_1 = Mean for low level of teacher's education

M_2 = Mean for high level of teacher's education

**F significant at .01 level

*F significant at .05 level

instrument, and negatively related to performance on the Behavior Inventory.

d. Variations with Pretest-Posttest Interval (Table 148)

For children with pretest-posttest intervals of 17 weeks or more, Teacher's Education was positively related to performance on the Stanford - Binet and on one subscore of the Preschool Inventory, and negatively related to the Behavior Inventory. No significant relationships were found in the Short Interval (less than 17 weeks) group.

2. Teacher's Experience with Preschoolers and Poverty Children

a. Variations with Child's Pretest IQ (Table 149)

The positive relationship found in the total sample between Teacher's Experience and Stanford - Binet performance was exclusively in the Mid IQ group. This group also showed a positive relationship between Teacher's Experience and the Concept Activation-Sensory subscore of the Preschool Inventory. A negative relationship of the program variable with the Concept Activation-Numerical subscore was found in the High IQ group.

b. Variations with Child's Age (Table 150)

For the Old group of children, Teacher's Experience was positively related to the children's performance on the Stanford - Binet (.05 level) and on the Associative-Vocabulary subtest of the Preschool Inventory (.01 level). There were no significant relationships within the Young group.

c. Variations with Urban/Non-Urban Residence (Table 151)

There were no significant relationships in the Urban group, but for the Non-Urban children, Teacher's Experience was positively related to Stanford - Binet performance (.05 level), and negatively related to scores on the Concept Activation-Numerical subtest of the Preschool Inventory.

Table 148

ANALYSIS OF VARIANCE ON TEACHER'S EDUCATION

SUBSET BY PRETEST-POSTTEST INTERVAL (1966-67)

Dependent Variable	Short Interval				Long Interval			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet					93.91	96.02	612	4.58*
Associative-Vocab. Percentile					45.97	54.16	762	16.35**
Behavior Inventory					149.70	142.59	789	12.20**

M_1 = Mean for low level of teacher's education

**F significant at .01 level

M_2 = Mean for high level of teacher's education

*F significant at .05 level

Table 149

ANALYSIS OF VARIANCE ON TEACHER'S EXPERIENCE WITH PRESCHOOLERS AND POVERTY CHILDREN

SUBSET BY PRETEST IQ (1966-67)

Dependent Variable	Low IQ (Below 85)				Mid IQ (85-95)				High IQ (Above 95)			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet					95.75	97.65	509	5.02*				
Concept Activ.-Numer. Percentile									58.63	53.39	533	9.75**
					56.24	52.33	411	4.47*				

Table 150

ANALYSIS OF VARIANCE ON TEACHER'S EXPERIENCE WITH PRESCHOOLERS AND POVERTY CHILDREN SUBSET BY CHILD'S AGE (1966-67)

Dependent Variable	Young				Old			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet					94.97	96.94	1009	6.66*
Associative-Vocab. Percentile					51.82	55.48	883	7.31**

M_1 = Mean for low level of teacher's experience

M_2 = Mean for high level of teacher's experience

**F significant at .01 level

*F significant at .05 level

Table 151

ANALYSIS OF VARIANCE ON TEACHER'S EXPERIENCE WITH PRESCHOOLERS AND POVERTY CHILDREN SUBSET BY URBAN/NON-URBAN RESIDENCE (1966-67)

Dependent Variable	Urban				Non-Urban			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet					96.11	97.55	657	4.03*
Concept. Activ. Numer. Percentile					55.23	51.72	624	4.62*

M_1 = Mean for low level of teacher's experience

*F significant at .05 level

M_2 = Mean for high level of teacher's experience

d. Variations with Pretest-Posttest Interval

When the data were subset by pretest-posttest interval, neither of the subgroups showed significant relationships between Teacher's Experience and any of the performance measures. This suggests that the apparent relationship found for the total sample between Teacher's Experience and Stanford - Binet performance was at least partly a statistical artifact: Teacher's Experience was evidently confounded with pretest-posttest interval, which in turn was systematically related to site locations.

3. Teacher's Social Development Techniques

Although the total sample of children showed no significant relationships between Teacher's Social Development Techniques and any of the performance measures, some relationships were found when the data were subset. These relationships are discussed in the following paragraphs.

a. Variations with Child's Pretest IQ (Table 152)

In the Mid IQ group, level of emphasis on social development techniques was positively related (.05 level) to performance on the Stanford - Binet and on the Personal-Social Responsiveness subtest of the Preschool Inventory. No significant relationships were found for the Low IQ group or the High IQ group.

b. Variations with Child's Age

When the data were subset by Child's Age, no significant relationships were found in either subgroup. This fact suggests that relationships found for subgroups defined on other subsetting variables may be, at least in part, artifacts of confounding of the Social Development Techniques variable with differences in the children's ages.

c. Variations with Urban/Non-Urban Residence (Table 153)

For Urban children, the level of classroom emphasis on social development activities was positively associated (.05 level) with Stanford - Binet performance. No significant relationships were found in the Non-Urban group.

Table 152

ANALYSIS OF VARIANCE ON TEACHER'S SOCIAL DEVELOPMENT TECHNIQUES SUBSET BY PRETEST IQ (1966-67)

Dependent Variable	Low IQ (Below 85)				Mid IQ (85-95)				High IQ (Above 95)			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet					96.02	97.92	555	5.47*				
Pers.-Social Resp. Percentile					53.44	57.40	454	5.25*				

M_1 = Mean for low emphasis on social development

M_2 = Mean for high emphasis on social development

*F significant at .05 level

Table 153

ANALYSIS OF VARIANCE ON TEACHER'S SOCIAL DEVELOPMENT TECHNIQUES SUBSET BY URBAN/NON-URBAN RESIDENCE (1966-67)

Dependent Variable	Urban				Non-Urban			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	95.24	96.84	716	5.32*				

M_1 = Mean for low emphasis on social development

*F significant at .05 level

M_2 = Mean for high emphasis on social development

d. Variations with Pretest-Posttest Interval (Table 154)

Subsetting of the data by pretest-posttest interval reveals much stronger relationships than were found for the total sample; evidently these relationships were obscured in the total sample by confounding of the Social Development Techniques variable with differences in the children's length of exposure to the different programs. For the Long Interval subgroup, the program variable was positively associated at the .01 level with performance on the Stanford - Binet, the total Preschool Inventory, and two subscores of the Preschool Inventory.

4. Teacher's Academic Orientation

a. Variations with Child's Pretest IQ (Table 155)

Teacher's Academic Orientation was positively associated in the Low IQ group with Stanford - Binet performance (.01 level), and in the High IQ group with the Associative-Vocabulary subscore of the Preschool Inventory (.05 level). The Mid IQ group showed no significant relationships.

b. Variations with Child's Age (Table 156)

In the Old subgroup, Teacher's Academic Orientation was positively associated (.05 level) with Stanford - Binet performance. There were no significant relationships in the Young subgroup.

c. Variations with Urban/Non-Urban Residence (Table 157)

Urban children showed a positive relationship at the .01 level between Teacher's Academic Orientation and Stanford - Binet performance. No significant relationships were found in the Non-Urban children.

d. Variations with Pretest-Posttest Interval (Table 158)

Subsetting by length of pretest-posttest interval reveals more and stronger relationships than were found for the total sample; the true potency of the Academic Orientation variable was apparently obscurred in the total-sample analysis by its being confounded with differences in the length of program

Table 154

ANALYSIS OF VARIANCE ON TEACHER'S SOCIAL DEVELOPMENT TECHNIQUES
SUBSET BY PRETEST-POSTTEST INTERVAL (1966-67)

Dependent Variable	Short Interval				Long Interval			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford - Binet					94.96	97.41	659	10.85**
Total Preschool Inventory Percentile	57.84	54.75	579	4.74*				
Pers.-Social Resp. Percentile					54.15	59.48	814	15.10**
Associative-Vocab. Percentile					53.12	57.33	810	7.37**

M_1 = Mean for low emphasis on social development **F significant at .01 level

M_2 = Mean for high emphasis on social development *F significant at .05 level

Table 155

ANALYSIS OF VARIANCE ON TEACHER'S ACADEMIC ORIENTATION
SUBSET BY PRETEST IQ (1966-67)

Dependent Variable	Low IQ (Below 85)				Mid IQ (85-95)				High IQ (Above 95)			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	95.98	98.94	502	12.63**								
Associative-Vocab. Percentile									56.26	59.71	566	4.14*

M_1 = Mean for low level of academic orientation

M_2 = Mean for high level of academic orientation

**F significant at .01 level

*F significant at .05 level

Table 156

ANALYSIS OF VARIANCE ON TEACHER'S ACADEMIC ORIENTATION SUBSET BY CHILD'S AGE (1966-67)

Dependent Variable	Young				Old			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet					95.59	97.13	1084	6.45*

M_1 = Mean for low level of academic orientation

*F significant at .05 level

M_2 = Mean for high level of academic orientation

Table 157

ANALYSIS OF VARIANCE ON TEACHER'S ACADEMIC ORIENTATION SUBSET BY URBAN/NON-URBAN RESIDENCE (1966-67)

Dependent Variable	Urban				Non-Urban			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	95.78	97.68	716	6.85**				

M_1 = Mean for low level of academic orientation

**F significant at .01 level

M_2 = Mean for high level of academic orientation

Table 158

ANALYSIS OF VARIANCE ON TEACHER'S ACADEMIC ORIENTATION SUBSET BY PRETEST-POSTTEST INTERVAL (1966-67)

Dependent Variable	Short Interval				Long Interval			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	96.22	98.28	634	5.97*	96.04	97.64	659	4.88*
Total Preschool Inventory Percentile	57.79	54.71	579	4.47*	57.50	61.27	808	8.46**
Pers.-Social Resp. Percentile					56.23	59.37	814	5.74*
Associative-Vocab. Percentile					54.42	58.64	810	8.27**
Concept Activ.-Numer. Percentile	53.66	49.21	589	6.22*				
Concept Activ.-Sensory Percentile					53.27	56.91	814	6.88**

M_1 = Mean for low level of academic orientation **F significant at .01 level

M_2 = Mean for high level of academic orientation *F significant at .05 level exposure provided at different sites. For the Long Interval subgroup, Teacher's Academic Orientation was positively associated with performance on the Stanford - Binet, the total Preschool Inventory, and three of the subscores of the Preschool Inventory. In the Short Interval subgroup, the program variable was positively related to the Stanford - Binet, but negatively related to the total Preschool Inventory and to one subscore on that instrument.

5. Adequacy of Outdoor Play Equipment

This program variable showed no significant relationships with any performance measures in the total sample; some relationships were found when the data were subset, as described in the following paragraphs.

a. Variations with Pretest IQ (Table 159)

Adequacy of Outdoor Play Equipment was postiively associated with performance on the total Preschool Inventory (Mid and High IQ subgroups) and on the Concept Activation-Numerical subtest (Mid IQ subgroup), but negatively associated with performance on the Concept Activation-Sensory subtest (Low IQ subgroup).

b. Variations with Child's Age

When the children were subset by age, neither group showed any significant relationships between performance and Adequacy of Outdoor Play Equipment. This finding suggests that the apparent relationships revealed by subsetting on other child-description variables may be artifacts of the program variable's confounding with the age variable.

c. Variations with Urban/Non-Urban Residence (Table 160)

Both the Urban and Non-Urban subgroups showed positive relationships between Adequacy of Outdoor Play Equipment and performance on the Preschool Inventory.

d. Variations with Pretest-Posttest Interval (Table 161)

No significant relationships were found in the Short Interval subgroup, and only one (Concept Activation-Numerical subtest) in the Long Interval subgroup.

Table 159

ANALYSIS OF VARIANCE ON ADEQUACY OF OUTDOOR PLAY EQUIPMENT

SUBSET BY PRETEST IQ (1966-67)

Dependent Variable	Low IQ (Below 85)				Mid IQ (85-95)				High IQ (Above 95)			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Total Preschool Inventory Percentile					55.84	60.45	393	6.43*				
Concept Activ.-Numer. Percentile					58.93	53.63	394	5.00*	53.73	58.53	532	7.57**
Concept Activ.-Sensory Percentile	52.69	47.66	352	5.67*								

M_1 = Mean for low level of adequacy

M_2 = Mean for high level of adequacy

**F significant at .01 level

*F significant at .05 level

Table 160

ANALYSIS OF VARIANCE ON ADEQUACY OF OUTDOOR PLAY EQUIPMENT
SUBSET BY URBAN/NON-URBAN RESIDENCE (1966-67)

Dependent Variable	Urban				Non-Urban			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Total Preschool Inventory Percentile					58.39	61.39	617	4.23*
Associative-Vocab. Percentile					54.77	58.18	625	4.30*
Concept Activ.-Numer. Percentile	49.37	53.03	692	5.00*				
Concept Activ.-Sensory Percentile	52.90	57.58	690	9.20**				

M_1 = Mean for low level of adequacy

M_2 = Mean for high level of adequacy

**F significant at .01 level

*F significant at .05 level

Table 161

ANALYSIS OF VARIANCE ON ADEQUACY OF OUTDOOR PLAY EQUIPMENT
SUBSET BY PRETEST-POSTTEST INTERVAL (1966-67)

Dependent Variable	Short Interval				Long Interval			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Concept Activ.-Numer. Percentile					50.71	53.96	759	4.60*

M_1 = Mean for low level of adequacy

M_2 = Mean for high level of adequacy

*F significant at .05 level

6. Teacher's Non-Punitiveness

Subsetting failed to reveal any significant relationships for this program variable.

H. SUMMARY OF FINDINGS FOR 1966-67

Head Start children in 1966-67 experienced significant gains (.01 level) on all of the cognitive and affective performance measures used in this study. On the Stanford - Binet (the only measure permitting direct comparison across years), the mean gain in 1966-67 was slightly less than that for 1967-68 and 1968-69 (approximately four points in 1966-67 compared with about four-and-a-half points in the other years).

On several measures, children with "long" program exposure (17 weeks or more) gained significantly more than those with shorter exposure. This suggests that program "effects" were cumulative, at least over the period of this evaluation.

As in 1967-68 and 1968-69, there was a tendency for children with lower initial scores to register larger gains; this may in part reflect a regression-toward-the-mean phenomenon, but may also mean that the programs had certain characteristics making them more beneficial to the children with lower initial capabilities. Another trend was for younger children (under 60 months) to make larger gains on the Preschool Inventory than the older children; this also is consistent with findings for the other two years of the National Evaluation.

When the data for all of the sample children were combined, few strong relationships were found between the six program variables of interest, and the children's performance gains. The teacher's degree of emphasis on academically oriented classroom activities was positively associated (.01 level) with Stanford - Binet performance, as was the teacher's level of prior experience with preschoolers and poverty children (.05 level). The teacher's education level was positively associated with one subtest of the Preschool Inventory but negatively related to another subtest. No significant relationships were found for the other three program variables (Adequacy of Outdoor Play Equipment, Teacher's Non-Punitiveness, and Teacher's Social Development Techniques).

The picture regarding the "effects" of the program variables changed appreciably when separate analyses were performed for different subgroups of children. In several cases, subsetting revealed relationships between program variables and performance measures that were obscured in the total-sample analyses. The most potent subsetter in this respect was the pretest-posttest interval. For example, Teacher's Academic Orientation was positively related in the total sample only to Stanford - Binet performance; however, when the analysis was subset by pretest-posttest interval, children in the Long Interval subgroup (17 weeks or more) also showed positive relationships of the program variable with the total Preschool Inventory and with several subtests of that instrument. By contrast, the Short Interval subgroup showed a negative relationship between Teacher's Academic Orientation and Preschool Inventory performance; this reversal of direction in the two subgroups probably accounts for the overall lack of significant relationships on the Preschool Inventory for the total sample.

In several other cases, subsetting had the effect of washing out the apparent relationships between a program variable and the children's performance. For example, the total sample showed a positive relationship between Teacher's Experience with Preschoolers and Poverty Children; this relationship was no longer evident when the data were subset by pretest-posttest interval. Similarly, the total-sample relationship between Adequacy of Outdoor Play Equipment and performance on the Preschool Inventory disappeared when separate analyses were performed for Young and Old children. Such findings strongly suggest that the relationships found in the analyses of the total sample were at least partly artifacts of confounding between the program variables and one or more of the subsetting variables.

As noted elsewhere in this report, the study's design does not permit direct evidence of causal relationships between program variables and children's performance. For convenience, however, the term "effect" is used in the following paragraphs, which summarize relationships between the six program variables and the performance measures.

Teacher's Academic Orientation: Children in classes with greater focus on academic/cognitive activities made significantly larger gains on most of the cognitive measures; this trend was particularly evident when separate analyses were performed for children who were exposed to the programs for at least 17 months.

Teacher's Education: Children with better educated teachers showed superior performance on both cognitive measures (Stanford - Binet and Preschool Inventory), but had lower performance on the one social-emotional measure (Behavior Inventory). The positive relationship with cognitive performance is a reversal of trends found in the 1967-68 and 1968-69 data.

Teacher's Social Development Techniques: In the Long Interval subgroup, this program variable showed a strong positive relationship with several cognitive measures, but none with the social-emotional measure (Behavior Inventory) where such a relationship might have been expected. Despite the fact that subsetting on Child's Age reduced the apparent strength of "effects" of the variable, the overall evidence suggests that Teacher's Social Development Techniques may have been a fairly potent factor in certain aspects of the children's behavior.

Teacher's Experience with Preschoolers and Poverty Children: Significant relationships between this variable and performance were few and inconsistent. In view of the fact that all relationships were washed out by subsetting on pretest-posttest interval, it does not appear that Teacher's Experience had any great overall effects on performance.

Adequacy of Outdoor Play Equipment: For some subgroups of children this variable had positive relationships with certain performance measures, but in general it does not show the strong effects that "Large Muscle Equipment" showed in the 1968-69 data (See TM-4862/000).

Teacher's Non-Punitiveness: Whereas a similar variable showed fairly strong positive relationships with performance in the 1968-69 analyses, no such relationships were found for any subgroups in the 1966-67 analyses.

APPENDIX A

FREQUENCY DISTRIBUTION OF PRETEST, POSTTEST, AND GAIN SCORES ON DEPENDENT VARIABLES

Table A-1

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON STANFORD-BINET

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
Above 134	0	0.00	7	0.46
130 - 134	4	0.27	7	0.46
125 - 129	9	0.60	19	1.26
120 - 124	16	1.06	39	2.58
115 - 119	36	2.39	63	4.18
110 - 114	47	3.12	86	5.70
105 - 109	137	9.08	167	11.08
100 - 104	147	9.75	192	12.74
95 - 99	217	14.39	241	15.98
90 - 94	241	15.98	230	15.25
85 - 89	223	14.79	165	10.94
80 - 84	170	11.27	134	8.89
75 - 79	110	7.30	79	5.24
70 - 74	72	4.77	41	2.72
65 - 69	39	2.58	22	1.46
60 - 64	22	1.46	12	0.80
55 - 59	11	0.73	2	0.13
Below 55	7	0.46	2	0.13

N = 1508

Table A-2

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON STANFORD-BINET

VALUES	FREQUENCY	PERCENTAGE
Above 39	6	0.40
35-39	4	0.27
30-34	8	0.53
25-29	24	1.59
20-24	52	3.45
15-19	122	8.09
10-14	232	15.38
5-9	283	18.76
0-4	328	21.75
(-5)-(-1)	228	15.12
(-10)-(-6)	149	9.88
(-15)-(-11)	47	3.12
(-20)-(-16)	21	1.39
Below (-20)	4	0.27

N = 1508

Table A-3

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON FACTORS AFFECTING TEST PERFORMANCE

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
75 - 79	0	0.00	0	0.00
70 - 74	122	8.28	99	6.72
65 - 69	390	26.46	592	40.16
60 - 64	299	20.28	320	21.71
55 - 59	194	13.16	178	12.08
50 - 54	128	8.68	88	5.97
45 - 49	94	6.38	64	4.34
40 - 44	66	4.48	50	3.39
35 - 39	69	4.68	35	2.37
30 - 34	54	3.66	20	1.36
25 - 29	28	1.90	15	1.02
20 - 24	13	0.88	5	0.34
15 - 19	15	1.02	8	0.54
10 - 14	2	0.14	0	0.00

N = 1474

Table A-4

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON
FACTORS AFFECTING TEST PERFORMANCE

VALUES	FREQUENCY	PERCENTAGE
Above 47	2	0.14
40-47	9	0.61
32-39	27	1.83
24-31	62	4.21
16-23	117	7.94
8-15	190	12.89
0-7	628	42.60
(-8)-(-1)	284	19.27
(-16)-(-9)	84	5.70
(-24)-(-17)	41	2.78
(-32)-(-25)	20	1.36
Below (-32)	10	0.67

N = 1474

Table A-5

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON SIOP: TOTAL VERBAL BEHAVIOR

(For Persons with Both Prescores and Postscores)

VALUES *	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
Above 139	3	0.20	1	0.06
130 - 139	4	0.27	1	0.06
120 - 129	6	0.40	3	0.20
110 - 119	16	1.06	14	0.93
100 - 109	18	1.19	23	1.53
90 - 99	30	1.99	36	2.39
80 - 89	46	3.05	51	3.38
70 - 79	61	4.05	107	7.10
60 - 69	103	6.83	141	9.36
50 - 59	143	9.49	201	13.34
40 - 49	220	14.60	215	14.27
30 - 39	258	17.12	241	15.99
20 - 29	245	16.26	251	16.66
10 - 19	212	14.07	148	9.82
0 - 9	142	9.42	74	4.91

N = 1507

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*For interpretation of scale, see Table 26.

Table A-6

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON SIOP: TOTAL VERBAL BEHAVIOR

VALUES	FREQUENCY	PERCENTAGE
Above 74	14	0.93
60-74	30	1.99
45-59	53	3.52
30-44	144	9.55
15-29	293	19.44
0-14	363	24.09
(-15)-(-1)	331	21.96
(-30)-(-16)	143	9.49
(-45)-(-31)	86	5.71
(-60)-(-46)	33	2.19
Below (-60)	17	1.13

N = 1507

Table A-7

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON SIOP: TOTAL NON-VERBAL BEHAVIOR

(For Persons with Both Prescores and Postscores)

VALUES *	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
Above 74	2	0.13	3	0.20
70 - 74	3	0.20	2	0.13
65 - 69	1	0.07	3	0.20
60 - 64	9	0.60	2	0.13
55 - 59	7	0.47	6	0.40
50 - 54	10	0.66	10	0.66
45 - 49	13	0.86	17	1.13
40 - 44	21	1.40	17	1.13
35 - 39	33	2.19	34	2.26
30 - 34	43	2.86	60	3.99
25 - 29	65	4.32	77	5.12
20 - 24	122	8.11	88	5.85
15 - 19	148	9.83	178	11.83
10 - 14	262	17.41	252	16.74
5 - 9	379	25.18	367	24.38
0 - 4	387	25.71	389	25.85

N = 1505

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*For interpretation of scale, see Table 27.

Table A-8

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON
SIOP: TOTAL NON-VERBAL BEHAVIOR

VALUES	FREQUENCY	PERCENTAGE
Above 69	1	0.07
60-69	2	0.14
50-59	7	0.47
40-49	16	1.03
30-39	26	1.73
20-29	62	4.12
10-19	176	11.70
0-9	517	34.35
(-10)-(-1)	442	29.37
(-20)-(-11)	145	9.64
(-30)-(-21)	64	4.26
(-40)-(-31)	28	1.86
(-50)-(-41)	11	0.73
(-60)-(-51)	5	0.33
Below (-60)	3	0.20

N = 1505

Table A-9

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON SIOP: TOTAL INAPPROPRIATE BEHAVIOR

(For Persons with Both Prescores and Postscores)

VALUES *	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
Above 19	3	0.29	3	0.29
18 - 19	2	0.19	1	0.10
16 - 17	4	0.39	0	0.00
14 - 15	1	0.10	3	0.29
12 - 13	5	0.48	2	0.19
10 - 11	4	0.39	6	0.58
8 - 9	15	1.45	9	0.87
6 - 7	27	2.62	31	3.00
4 - 5	48	4.65	50	4.85
2 - 3	140	13.57	165	15.99
0 - 1	783	75.87	762	73.84

N = 1032

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*For interpretation of scale, see Table 28.

Table A-10

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON
SIOP: TOTAL INAPPROPRIATE BEHAVIOR

VALUES	FREQUENCY	PERCENTAGE
Above 69	1	0.10
60-69	1	0.10
50-59	0	0.00
40-49	0	0.00
30-39	0	0.00
20-29	1	0.10
10-19	7	0.67
0-9	784	75.97
(-10)-(-1)	227	21.99
(-20)-(-11)	8	0.77
(-30)-(-21)	1	0.10
(-40)-(-31)	1	0.10
(-50)-(-41)	0	0.00
Below (-50)	1	0.10

N = 1032

Table A-11

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON SIOP: INITIATIONS BY SUBJECT TO PEERS OF SAME ETHNIC GROUP

(For Persons with Both Prescores and Postscores)

VALUES *	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
Above 64	1	0.07	0	0.00
60 - 64	0	0.00	0	0.00
55 - 59	2	0.16	0	0.00
50 - 54	0	0.00	1	0.07
45 - 49	3	0.23	6	0.47
40 - 44	10	0.78	6	0.47
35 - 39	19	1.48	16	1.25
30 - 34	31	2.43	34	2.65
25 - 29	74	5.78	74	5.78
20 - 24	123	9.60	135	10.54
15 - 19	217	16.94	233	18.20
10 - 14	264	20.61	297	23.18
5 - 9	299	23.34	296	23.10
0 - 4	238	18.58	183	14.29

N = 1281

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*For interpretation of scale, see Table 29.

Table A-12

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON SIOP: INITIATIONS BY SUBJECT TO PEERS OF SAME ETHNIC GROUP

VALUES	FREQUENCY	PERCENTAGE
Above 29	3	0.24
25-29	7	0.55
20-24	22	1.71
15-19	55	4.29
10-14	99	7.73
5-9	211	16.47
0-4	329	25.68
(-5)-(-1)	269	21.00
(-10)-(-6)	160	12.49
(-15)-(-11)	71	5.54
(-20)-(-16)	27	2.11
(-25)-(-21)	14	1.09
(-30)-(-26)	12	0.94
Below (-30)	2	0.16

N = 1281

Table A-13

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON SIOP: INITIATIONS BY SUBJECT TO PEERS OF OTHER ETHNIC GROUP

(For Persons with Both Prescores and Postscores)

VALUES*	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
Above 44	0	0.00	0	0.00
40 - 44	1	0.08	1	0.08
35 - 39	0	0.00	0	0.00
30 - 34	2	0.17	7	0.60
25 - 29	6	0.51	13	1.10
20 - 24	20	1.71	28	2.38
15 - 19	43	3.65	52	4.42
10 - 14	101	8.58	106	9.01
5 - 9	187	15.89	212	18.01
0 - 4	817	69.41	758	64.40

N = 1177

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*For interpretation of scale, see Table 30.

Table A-14

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON
SIOP: INITIATIONS BY SUBJECT TO PEERS OF OTHER ETHNIC GROUP

VALUES	FREQUENCY	PERCENTAGE
Above 29	2	0.17
25-29	2	0.17
20-24	4	0.34
15-19	19	1.61
10-14	33	2.81
5-9	116	9.86
0-4	676	57.43
(-5)-(-1)	250	21.24
(-10)-(-6)	49	4.16
(-15)-(-11)	20	1.70
(-20)-(-16)	4	0.34
Below (-20)	2	0.17

N = 1177

Table A-15

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON EFFECT OF HEAD START ON CHILD

(For Persons with Both Prescores and Postscores)

VALUES*	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
7	157	11.31	195	14.05
6	136	9.80	154	11.09
5	146	10.52	150	10.81
4	160	11.53	171	12.32
3	224	16.14	197	14.19
2	295	21.25	288	20.75
1	252	18.15	219	15.78
0	18	1.30	14	1.01

N = 1388

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*For interpretation of scale, see discussion of Figure 39 on page 54.

Table A-16

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON
PERCEIVED EFFECT OF HEAD START ON CHILD

VALUES	FREQUENCY	PERCENTAGE
Above 5	8	0.57
5	26	1.87
4	51	3.67
3	70	5.04
2	137	9.87
1	281	20.25
0	397	28.60
(-1)	186	13.40
(-2)	119	8.57
(-3)	61	4.40
(-4)	34	2.46
(-5)	15	1.08
(-6)	2	0.15
(-7)	1	0.07

N = 1388

Table A-17

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON PARENT EDUCATIONAL ASPIRATIONS FOR CHILD

(For Persons with Both Prescores and Postscores)

VALUES *	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
9	75	5.42	72	5.20
8	594	42.89	581	41.95
7	380	27.44	381	27.51
6	46	3.32	28	2.01
5	265	19.13	295	21.30
4	10	0.72	12	0.87
3	2	0.15	1	0.07
2	2	0.15	3	0.22
1	11	0.78	12	0.87

N = 1385

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*For interpretation of scale, see Table 42.

Table A-18

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON PARENT EDUCATIONAL ASPIRATIONS FOR CHILD

VALUES	FREQUENCY	PERCENTAGE
8	1	0.07
7	1	0.07
6	4	0.29
5	0	0.00
4	7	0.51
3	54	3.90
2	72	5.20
1	177	12.78
0	720	51.98
(-1)	187	13.50
(-2)	82	5.92
(-3)	63	4.55
(-4)	10	0.72
(-5)	1	0.07
(-6)	3	0.22
(-7)	3	0.22

N = 1385

Table A-19

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON PARENT EDUCATIONAL EXPECTATIONS FOR CHILD

(For Persons with Both Prescores and Postscores)

VALUES*	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
9	10	0.72	12	0.87
8	154	11.14	151	10.92
7	152	10.99	135	9.76
6	53	3.83	39	2.82
5	824	59.58	808	58.42
4	21	1.52	23	1.66
3	57	4.12	69	4.99
2	16	1.16	27	1.95
1	96	6.94	119	8.61

N = 1383

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*For interpretation of scale, see Table 43.

Table A-20

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON PARENT EDUCATIONAL EXPECTATIONS FOR CHILD

VALUES	FREQUENCY	PERCENTAGE
7	5	0.36
6	5	0.36
5	3	0.21
4	44	3.18
3	57	4.12
2	100	7.23
1	61	4.41
0	762	55.10
(-1)	84	6.08
(-2)	112	8.10
(-3)	63	4.56
(-4)	65	4.70
(-5)	4	0.29
(-6)	15	1.09
(-7)	3	0.21

N = 1383

Table A-21

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON PARENT FEELING OF VALUE OF EDUCATION

(For Persons with Both Prescores and Postscores)

VALUES *	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
Above 89.9	7	0.50	6	0.43
80.0 - 89.9	37	2.64	46	3.28
70.0 - 79.9	133	9.49	141	10.06
60.0 - 69.9	271	19.34	263	18.77
50.0 - 59.9	350	24.98	373	26.63
40.0 - 49.9	233	16.63	217	15.49
30.0 - 39.9	226	16.13	226	16.13
20.0 - 29.9	105	7.50	93	6.64
10.0 - 19.9	36	2.57	31	2.21
0.0 - 9.9	3	0.22	5	0.36

N = 1401

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*For interpretation of scale, see discussion of Table 44 on page 58.

Table A-22

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON PARENT FEELING OF VALUE OF EDUCATION

VALUES	FREQUENCY	PERCENTAGE
Above 59.9	2	0.14
50.0-59.9	2	0.14
40.0-49.9	19	1.36
30.0-39.9	47	3.36
20.0-29.9	112	7.99
10.0-19.9	270	19.27
0.0- 9.9	407	29.05
(-10.0)-(-0.1)	52	3.71
(-20.0)-(-10.1)	270	19.27
(-30.0)-(-20.1)	56	4.00
(-40.0)-(-30.1)	138	9.85
(-50.0)-(-40.1)	23	1.64
Below (-50.0)	3	0.22

N = 1401

APPENDIX B

FREQUENCY DISTRIBUTION OF PRETEST, POSTTEST, AND GAIN SCORES ON DEPENDENT VARIABLES (1966-67)

TABLE B-1
FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON STANFORD-BINET
(For Persons With Both Prescores and Postscores)
1966-67

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE OF NON-BLANKS	FREQUENCY	PERCENTAGE OF NON-BLANKS
Above 140	3	0.17	10	0.57
136 - 140	3	0.17	11	0.62
131 - 135	7	0.40	8	0.45
126 - 130	11	0.62	16	0.91
121 - 125	23	1.30	36	2.04
116 - 120	50	2.84	67	3.80
111 - 115	75	4.25	91	5.16
106 - 110	114	6.46	166	9.41
101 - 105	174	9.86	216	12.25
96 - 100	245	13.89	277	15.70
91 - 95	258	14.63	268	15.19
86 - 90	252	14.29	207	11.74
81 - 85	210	11.91	165	9.35
76 - 80	132	7.48	112	6.35
71 - 75	97	5.50	53	3.00
66 - 70	45	2.55	33	1.87
61 - 65	26	2.04	16	0.91
Below 61	29	1.64	12	0.68

N = 1,784

TABLE B-2
FREQUENCY DISTRIBUTION OF GAIN SCORES ON STANFORD-BINET
1966-67

VALUES	FREQUENCY	PERCENTAGE OF NON-BLANKS
Above 44	2	0.11
40 - 44	2	0.11
35 - 39	5	0.28
30 - 34	14	0.79
25 - 29	34	1.93
20 - 24	53	3.01
15 - 19	127	7.20
10 - 14	261	14.80
5 - 9	300	17.01
0 - 4	383	21.71
(-5) - (-1)	290	16.44
(-10) - (-6)	180	10.21
(-15) - (-11)	72	4.08
(-20) - (-16)	30	1.70
(-25) - (-21)	5	0.28
(-30) - (-26)	3	0.17
Below (-30)	3	0.17

N = 1,764

TABLE B-3
FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON TOTAL PRESCHOOL INVENTORY PERCENTILE
(For Persons With Both Prescores and Postscores)
1966-67

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE OF NON-BLANKS	FREQUENCY	PERCENTAGE OF NON-BLANKS
90 - 99	109	6.55	238	14.30
80 - 89	89	5.35	200	12.02
70 - 79	156	9.38	213	12.80
60 - 69	168	10.10	220	13.22
50 - 59	143	8.59	157	9.44
40 - 49	243	14.60	214	12.86
30 - 39	176	10.58	129	7.75
20 - 29	204	12.26	119	7.15
10 - 19	226	13.58	119	7.15
0 - 9	150	9.01	55	3.31

N = 1,664

TABLE B-4
FREQUENCY DISTRIBUTION OF GAIN SCORES ON TOTAL PRESCHOOL INVENTORY PERCENTILE
1966-67

VALUES	FREQUENCY	PERCENTAGE OF NON-BLANKS
Above 79	5	0.30
70 - 79	5	0.30
60 - 69	19	1.14
50 - 59	54	3.25
40 - 49	86	5.17
30 - 39	183	11.00
20 - 29	244	14.66
10 - 19	353	21.21
0 - 9	391	23.50
(-10) - (- 1)	205	12.32
(-20) - (-11)	66	3.97
(-30) - (-21)	32	1.92
(-40) - (-31)	16	0.96
Below (-40)	5	0.30

N = 1,664

TABLE B-5

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON PERSONAL-SOCIAL RESPONSIVENESS PERCENTILE

(For Persons With Both Prescores and Postscores)

1966-67

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE OF NON-BLANKS	FREQUENCY	PERCENTAGE OF NON-BLANKS
90 - 99	69	4.09	146	8.66
80 - 89	124	7.35	229	13.57
70 - 79	182	10.79	292	17.31
60 - 69	201	11.92	247	14.64
50 - 59	158	9.37	162	9.60
40 - 49	274	16.24	223	13.22
30 - 39	176	10.43	137	8.12
20 - 29	261	15.47	144	8.54
10 - 19	132	7.82	76	4.50
0 - 9	110	6.52	31	1.84

N = 1,687

TABLE B-6
FREQUENCY DISTRIBUTION OF GAIN SCORES ON PERSONAL-SOCIAL RESPONSIVENESS PERCENTILE
1966-67

VALUES	FREQUENCY	PERCENTAGE OF NON-BLANKS
70 - 79	6	0.36
60 - 69	21	1.24
50 - 59	61	3.62
40 - 49	101	5.99
30 - 39	185	10.97
20 - 29	229	13.57
10 - 19	325	19.27
0 - 9	383	22.70
(-10) - (-1)	189	11.20
(-20) - (-11)	105	6.22
(-30) - (-21)	44	2.61
(-40) - (-31)	23	1.36
(-50) - (-41)	14	0.83
(-60) - (-51)	1	0.06

N = 1,687

TABLE B-7
FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON ASSOCIATIVE VOCABULARY PERCENTILE
(For Persons With Both Prescores and Postscores)
1966-67

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE OF NON-BLANKS	FREQUENCY	PERCENTAGE OF NON-BLANKS
90 - 99	57	3.40	148	8.84
80 - 89	164	9.79	264	15.76
70 - 79	233	13.91	291	17.37
60 - 69	167	9.97	164	9.79
50 - 59	146	8.72	158	9.43
40 - 49	157	9.37	144	8.60
30 - 39	172	10.27	145	8.66
20 - 29	228	13.61	164	9.79
10 - 19	176	10.51	110	6.57
0 - 9	175	10.45	87	5.19

N = 1,675

TABLE B-8
FREQUENCY DISTRIBUTION OF GAIN SCORES ON ASSOCIATIVE VOCABULARY PERCENTILE
1966-67

VALUES	FREQUENCY	PERCENTAGE OF NON-BLANKS
80 - 89	1	0.06
70 - 79	17	1.01
60 - 69	23	1.37
50 - 59	41	2.45
40 - 49	116	6.92
30 - 39	164	9.79
20 - 29	219	13.07
10 - 19	280	16.72
0 - 9	373	22.27
(-10) - (-1)	201	12.00
(-20) - (-11)	116	6.93
(-30) - (-21)	68	4.06
(-40) - (-31)	37	2.21
(-50) - (-41)	13	0.78
(-60) - (-51)	4	0.24
(-70) - (-61)	2	0.12

N = 1,675

TABLE B-9

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON CONCEPT ACTIVATION-NUMERICAL PERCENTILE

(For Persons With Both Prescores and Postscores)
1966-67

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE OF NON-BLANKS	FREQUENCY	PERCENTAGE OF NON-BLANKS
90 - 99	71	4.22	134	7.98
80 - 89	127	7.56	227	13.51
70 - 79	134	7.98	186	11.07
60 - 69	167	9.94	195	11.61
50 - 59	169	10.06	176	10.48
40 - 49	234	13.93	181	10.77
30 - 39	237	14.11	213	12.68
20 - 29	224	13.33	162	9.64
10 - 19	171	10.18	125	7.44
0 - 9	146	8.69	81	4.82

N = 1,680

TABLE B-10

FREQUENCY DISTRIBUTION OF GAIN SCORES ON CONCEPT ACTIVATION - NUMERICAL PERCENTILE

1966-67

VALUES	FREQUENCY	PERCENTAGE OF NON-BLANKS
Above 79	3	0.18
70 - 79	10	0.60
60 - 69	26	1.55
50 - 59	57	3.39
40 - 49	79	4.70
30 - 39	136	8.10
20 - 29	228	13.57
10 - 19	276	16.43
0 - 9	370	22.02
(-10) - (-1)	246	14.64
(-20) - (-11)	137	8.15
(-30) - (-21)	57	3.39
(-40) - (-31)	27	1.61
(-50) - (-41)	19	1.13
Below (-50)	9	0.54

N = 1,680

TABLE B-11
FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON CONCEPT ACTIVATION-SENSORY PERCENTILE
(For Persons With Both Prescores and Postscores)
1966-67

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE OF NON-BLANKS	FREQUENCY	PERCENTAGE OF NON-BLANKS
90 - 99	78	4.63	162	9.61
80 - 89	84	4.98	117	6.94
70 - 79	184	10.91	326	19.33
60 - 69	192	11.39	257	15.24
50 - 59	169	10.02	177	10.50
40 - 49	272	16.13	207	12.28
30 - 39	222	13.17	167	9.90
20 - 29	195	11.57	151	8.96
10 - 19	142	8.42	74	4.39
0 - 9	148	8.78	48	2.85

N = 1,686

TABLE B-12
FREQUENCY DISTRIBUTION OF GAIN SCORES ON CONCEPT ACTIVATION - SENSORY PERCENTILE
1966-67

VALUES	FREQUENCY	PERCENTAGE OF NON-BLANKS
Above 79	5	0.30
70 - 79	14	0.83
60 - 69	29	1.72
50 - 59	52	3.08
40 - 49	90	5.34
30 - 39	174	10.32
20 - 29	253	15.01
10 - 19	290	17.20
0 - 9	353	20.94
(-10) - (-1)	183	10.85
(-20) - (-11)	146	8.66
(-30) - (-21)	53	3.14
(-40) - (-31)	32	1.90
(-50) - (-41)	8	0.47
Below (-50)	4	0.24

N = 1,686

TABLE B-13

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON BEHAVIOR INVENTORY: TOTAL RAW SCORE

(For Persons With Both Prescores and Postscores)

1966-67

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE OF NON-BLANKS	FREQUENCY	PERCENTAGE OF NON-BLANKS
Above 189	9	0.49	19	1.03
180 - 189	58	3.15	78	4.23
170 - 179	126	6.83	191	10.35
160 - 169	195	10.57	235	12.74
150 - 159	235	12.74	261	14.15
140 - 149	277	15.01	251	13.60
130 - 139	285	14.54	255	13.82
120 - 129	275	14.91	248	13.44
110 - 119	177	9.59	176	9.54
100 - 109	113	6.13	93	5.04
90 - 99	58	3.14	23	1.25
80 - 89	24	1.28	8	0.43
Below 89	13	0.71	7	0.38

N = 1,845

TABLE B-14
FREQUENCY DISTRIBUTION OF GAIN SCORES ON BEHAVIOR INVENTORY: TOTAL RAW SCORE
1966-67

VALUES	FREQUENCY	PERCENTAGE OF NON-BLANKS
85 - 99	5	0.27
70 - 84	8	0.43
55 - 69	22	1.19
40 - 54	66	3.58
25 - 39	153	8.29
10 - 24	431	23.36
(-5) - 9	636	34.47
(-20) - (-6)	350	18.97
(-35) - (-21)	130	7.05
(-50) - (-36)	30	1.63
(-65) - (-51)	11	0.60
Below (-65)	3	0.16

N = 1,845

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